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ABSTRACT

This report presents five goals and 14 objectives which will begin the process of accomplishing the legislative intent of the Arizona Environmental Education Act (HB 2675) of June 6, 1990 to integrate environmental education throughout the educational system and public education programs in Arizona. To accomplish the objectives, the report presents 92 recommended actions to be taken. A Goal Referenced Planning Model was chosen as the foundation for the comprehensive plan. The report identifies the primary goals of environmental education in Arizona which include: (1) each individual should have a basic understanding of the environmental sciences; (2) each individual should understand the interrelationships between human actions and the environment; (3) environmental education should be integrated into all school curriculums; (4) diverse environmental education opportunities should be available to the general public; and (5) environmental education in Arizona should be a cooperative venture, coordinated at all levels within the state and with national and international networks. Appendices include House Bill 2675, Senate Bill 1176, the Arizona Framework for Environmental Literacy established in 1991, the Tbilisi Declaration, and a synopsis of the National Environmental Education Act. (LZ)

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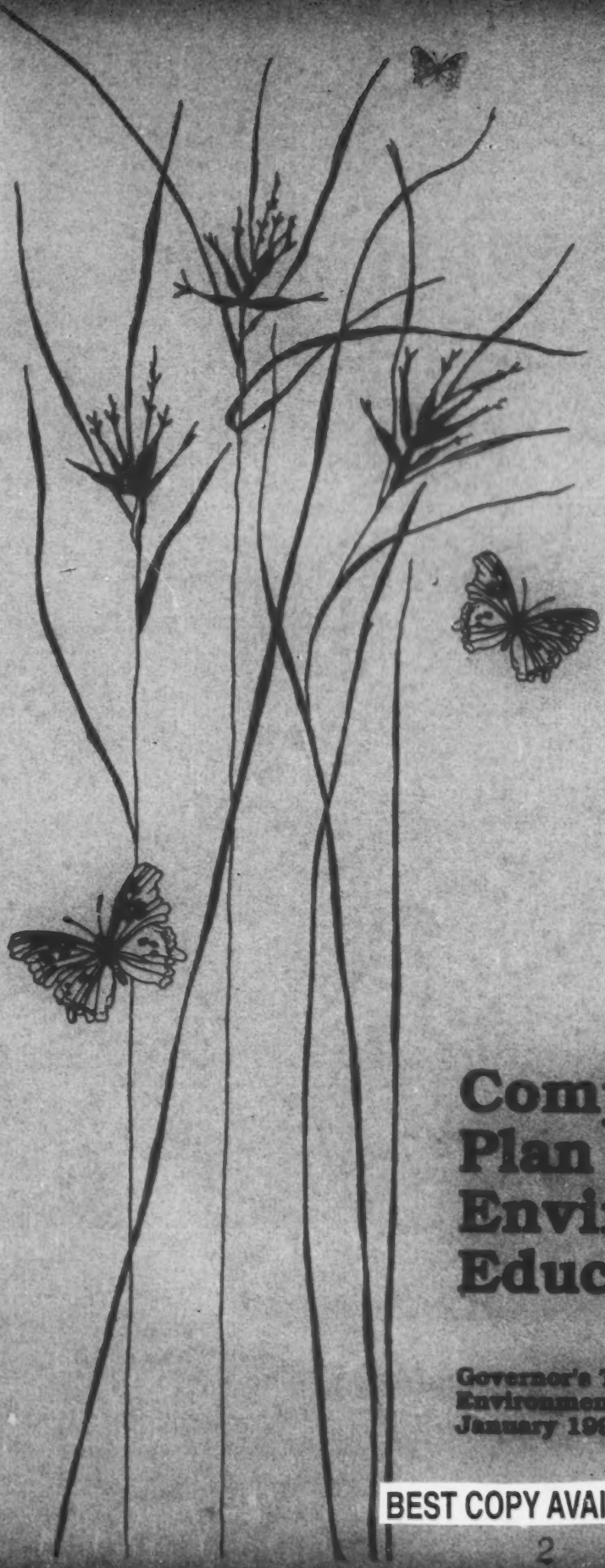

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Comprehensive Plan for Environmental Education

Governor's Task Force on Environmental Education
January 1992

SE 056 057

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Comprehensive Plan for Environmental Education

'In the end, environmental education boils down to a simple yet profoundly important imperitive: preparing ourselves for life and all its surprises in the next century. When the 21st century rolls around, it will not be enough for a few specialists to know what is going on while the rest of us wander around in ignorance.'

William K. Reilly, Administrator, U.S. EPA

Governor's Task Force on Environmental Education
January 1992

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GOVERNOR'S TASK FORCE ON

ENVIRONMENTAL EDUCATION

January 7, 1992

The Honorable Fife Symington
Governor of Arizona
1700 W. Washington
Phoenix, AZ 85007

Dear Governor Symington:

On behalf of the Governor's Environmental Education Task Force, I am pleased to present this report, **Comprehensive Plan for Environmental Education.**

The Task Force was established by the Arizona Environmental Education Act of June 6, 1990, (HB 2675) and consists of 31 members with experience in environmental issues. They represent a designated cross-section of private citizens and organizations, the formal education community, state and federal agencies, the Legislature and the Governor's Office. The first meeting of the Task Force was held on December 5, 1990. We have met frequently during the last year to address the tasks assigned to us and produce this plan.

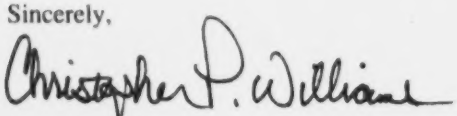
In April 1991 the Task Force completed its first task and submitted *An Assessment of Environmental Education in Arizona* to you and the Legislature. It contains a status report of environmental education in Arizona as of the spring of 1991.

The **Comprehensive Plan for Environmental Education** presents five goals and 14 objectives which will begin the process of accomplishing the legislative intent of the Arizona Environmental Education Act to integrate environmental education throughout the educational system and public education programs in Arizona so that awareness of students and the general public is thorough, continuous and meaningful. To accomplish these goals and objectives, we have made 92 recommendations of actions to be taken. Objective 14 states that a body be established to pursue full implementation of this plan. It is critical that this body and those entities involved in applying this plan make an annual evaluation of progress to measure the effectiveness of actions being taken and make adjustments as needed.

The Arizona Environmental Education Act put Arizona in the forefront of environmental education in America. Implementing this **Comprehensive Plan for Environmental Education** will make us a national leader in the field.

Members of the Governor's Environmental Education Task Force support this plan and offer their assistance to you and the citizens of our state in its implementation.

Sincerely,



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Acknowledgments

The Governor's Task Force on Environmental Education wishes to recognize those individuals, groups and organizations who made contributions to our work in developing this plan. They gave support and encouragement during the last year or provided finances to enable us to undertake various elements of the work.

Several individuals who were not members of the Task Force attended our meetings and brought their knowledge of the environment and education to our task. Some of these represented members of the Task Force when they could not attend. Included in this special group are Sam Baar, Tom Bischoff, Lisa Bray, Donna Chickering, Betty Dickens, Barbara Gast, Ann Howard, Linda Spencer, Kara Kinderman, Robert Mac Arthur, Neil Markowitz, Cheryl Mollohan, Thomas Nelson, Trica Oshant, Darlene Slusher, John Stair, Gary Stumpf, Larry Sullivan and Eric Thor.

The Salt River Project provided meeting space and refreshments for many of our meetings.

The Arizona Department of Education provided clerical and mailing services for the meeting minutes and took the responsibility of seeing that each meeting was properly posted according to the open meeting law.

The Arizona Association for Learning in and about the Environment paid certain expenses for some of the Task Force members who did not have an organization supporting them.

Three organizations contributed monies to the Arizona Environmental Education Task Force Fund. They were the Arizona Game and Fish Heritage Fund - $7,500, the Salt River Project - $1,000 and Southwest Gas - $500. Some of this money was used to reimburse members for their personal costs in attending Task Force meetings. The rest of the money from the Salt River Project and Southwest Gas was used to carry out the assessment process. Part of the Heritage Funds were used to layout and print this plan. The remainder will be used to layout and print an Environmental Education Planning Handbook to be developed this spring.

A special thanks to each of these people and organizations for making this plan possible.

Arizona Game and Fish
HERITAGE FUND

Lottery Dollars
Working for Wildlife

Introduction

"When we try to pick out something by itself, we find it hitched to everything else in the universe." John Muir

Environmental Education — the words alone create as many different images as the number of people reading them. From the protectionist to the reaper, the scientist to the proletariat — environmental education may be viewed as a threat or a salvation depending on whom is using the term.

The Governor's Environmental Education Task Force established by the Arizona Environmental Education Act of 1990 (HB 2675) was directed to issue a comprehensive plan for environmental education in Arizona to the Governor. This plan is to create a unified and coordinated environmental education program.

The need for implementing a program of this nature is great. It will focus attention on a set of common goals and objectives. It will encourage networking and sharing of resources thus strengthening programs and reducing the possibility of unnecessary duplication. Even more important in the minds of many, it will address the apparent deteriorating quality of the environment and the impact of this deterioration on all life.

The introductory paragraphs to the "Major Findings and Conclusions" section of *The Global 2000 Report to the President: Entering the Twenty-First Century*, prepared by the President's Council on Environmental Quality and the Department of State (Barney, 1980) emphasize this concern:

> If present trends continue, the world in 2000 will be more crowded, more polluted, less stable ecologically, and more vulnerable to disruption than the world we live in now. Serious stress involving population, resources, and environments are clearly visible ahead. Despite greater material output, the world's people will be poorer in many ways than they are today.
>
> For hundreds of millions of the desperately poor, the outlook for food and other necessities of life will be no better. For many it will be worse. Barring revolutionary advances in technology, life for most people on earth will be more precarious in 2000 than it is now — unless the nations of the world act decisively to alter current trends.

This quote reinforces the concerns of many that the unprecedented technological progress of the past several decades, while bringing benefits to many, has caused severe worldwide environmental consequences. Thus, while technological progress and economic growth exist in a close relationship, so do their accompanying environmental and social consequences.

If Earth may be described as a spaceship, then every action, personal or societal, must be performed with consideration of not only the immediate local but also the potential global consequences of that action. Environmental education must utilize the findings of science and technology to create an awareness and a better understanding of environmental problems. Through this knowledge, positive patterns of conduct towards the environment and nations' use of their resources must be molded so as to produce a global ethic.

The reasons for addressing these concerns varies. Some do it strictly for humanitarian reasons realizing the dependence of all life on the environment. Others become involved because of an interest in some ecosystem or a particular species. Many others harvest natural resources and seek to protect their livelihood. Some

believe that this world belongs to the Creator God and, as sojourners here, we are given the responsibility to care for it to honor and praise Him.
Based on their diverse, personal perspectives, the Task Force labored with the definition and context of environmental education as we prepared this comprehensive plan. The 31 members were selected for their experience in environmental issues, not for their common views of the process or its results. Consequently, this plan represents a consensus, not without reservations that it may be misapplied to foster one view over another.

Section 15-706 F. of the Act amended Title 15, Chapter 7, Article 1, Arizona Revised Statutes and defined environmental education as: "the educational process dealing with the relationship of humans to their natural and artificial surroundings and includes the relation of population, pollution, resource allocation, resource depletion, conservation, transportation, technology and urban and rural planning to the environment."

In the questionnaire used to gather an assessment of the current status of environmental education in Arizona, The Task Force included the following broad definition:

> "Environmental education is that component of education that may include one or more of the following:
> - aesthetic appreciation of the natural world;
> - basic scientific knowledge of how the natural world works;
> - appreciation of the value of environmental quality;
> - understanding of how humans affect their environment and how the environment affects humans, past and present;
> - experience in how personal choices and actions affect the natural environment; and
> - experience in methods of local — through — global community responsibility, in order to deal effectively with contemporary environmental issues."

These definitions are by necessity broad. They do not produce a clear picture of the topic but only indicate the general arenas in which education about the environment may occur. The results of this process are more important. They strive to create an awareness and sensitivity to the environment, to help individuals acquire a basic knowledge about the environment, to develop the skills of caring for the environment and any associated problems, and to provide opportunities for individuals and groups to work toward the resolution of problems.

This plan provides goals, objectives and recommendations to establish a process for environmental education. Implementation of the plan will achieve the Legislative intent of the Act which was: "The Legislature recognizes that the education of the people in this state is critical to maintaining the delicate balance among all forms of life and their environments. It is the intent of the Legislature that the public schools, community colleges, state universities and state agencies provide a continuing awareness of the essential mission to preserve the earth's capacity to sustain a quality of life in the most healthful, enjoyable and productive environment possible. It is the further intent of the Legislature that the public schools, community colleges, state universities and state agencies integrate environmental education throughout the educational system and public education programs so that awareness of students and the general public is thorough, continuous and meaningful."

This Comprehensive Plan for Environmental Education in Arizona presents five goals to accomplish the legislative intent of the Act. They will be met through a unified and coordinated environmental education program to achieve the 14 objectives listed in Section IV. The 92 recommendations are proposed action items which will begin the process.

This Act and the resulting plan build on the many years of history in environmental education which began in the late 1960's. The Task Force also has drawn from the experiences of those few other states which have adopted an environmental education law. A few highlights include:

September 1970 - Congress passed P.L. 91-516, The Environmental Education Act.

August 1972 - The United Nations Conference on the Human Environment met in Stockholm, Sweden and recommended that every nation promote environmental education program development. Their Declaration proclaimed "to defend and improve the environment for present and future generations has become an imperative goal for mankind."

July 1975 - The National Snowmass Conference: Environmental Education Perspectives and Prospectives produced two reports recommending roles and responsibilities for elementary, secondary and higher education; state governments; the federal government; industry, labor and business; and organizations.

October 1977 - UNESCO organized the World's First Intergovernmental Conference on Environmental Education at Tbilisi, Georgia, USSR which produced a refined statement of need, goals, objective categories and guiding principles for environmental education program development, *The Tbilisi Declaration* (See Appendix C). *The Tbilisi Declaration* stated that "In the last few decades, man has, through his power to transform his environment, wrought accelerated changes in the balance of nature. The result is frequent exposure of living species to dangers which may prove irreversible."

March 1978 - A National Leadership Conference on Environmental Education was conducted in Washington, D.C. Its report includes 16 recommendations targeted to groups at national, state and local levels. A recommendation to states urges that the goals and objectives for environmental education be further clarified for use by educators, and that mechanisms for achieving these goals be identified to encourage educators to utilize the total environment in all curriculum areas in program development and implementation.

August 1983 - The First National Congress for Environmental Education Futures: Policies and Practices sought to assess the effect and degree of implementation of the recommendations of the 1978 National Leadership Conference on Environmental Education.

June 1990 - The Arizona Environmental Education Act was signed into law by Governor Rose Mofford.

November 1990 - The National Environmental Education Act was signed into law by President George Bush.

The Governor's Environmental Education Task Force presents this plan to the Governor and the citizens of Arizona with pride and satisfaction. We believe that it presents a comprehensive plan for establishing an effective environmental education program.

'Awareness is becoming acquainted with environment, no matter where one happens to be. Man does not suddenly become aware or infused with wonder; it is something we are born with. No child need be told its secret; he keeps it until the influence of gadgetry and the indifference of teen-age satiation extinguish its intuitive joy.' Sugurd Olson

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Goal-Referenced Planning Model

"What ultimately makes education environmental is not its subject matter, but its procedures." Noel McInnis

The Environmental Education Task Force chose a Goal Referenced Planning Model as the foundation for this Comprehensive Plan. The model integrates the functions of planning, implementation and evaluation. It provided a systematic process for both the development and format of the plan. It increases the possibility for successful achievement of the program goals. A simple representation of the process is found in Figure 1.

The Arizona Environmental Education Act (HB 2675) identified the need to educate the people in this state so as to maintain the delicate balance among all forms of life and their environments. The Task Force was to issue a comprehensive plan for environmental education and "include findings and recommendations necessary to establish a unified and coordinated environmental education program within this state and may include draft legislations or rules necessary to implement the recommendations."

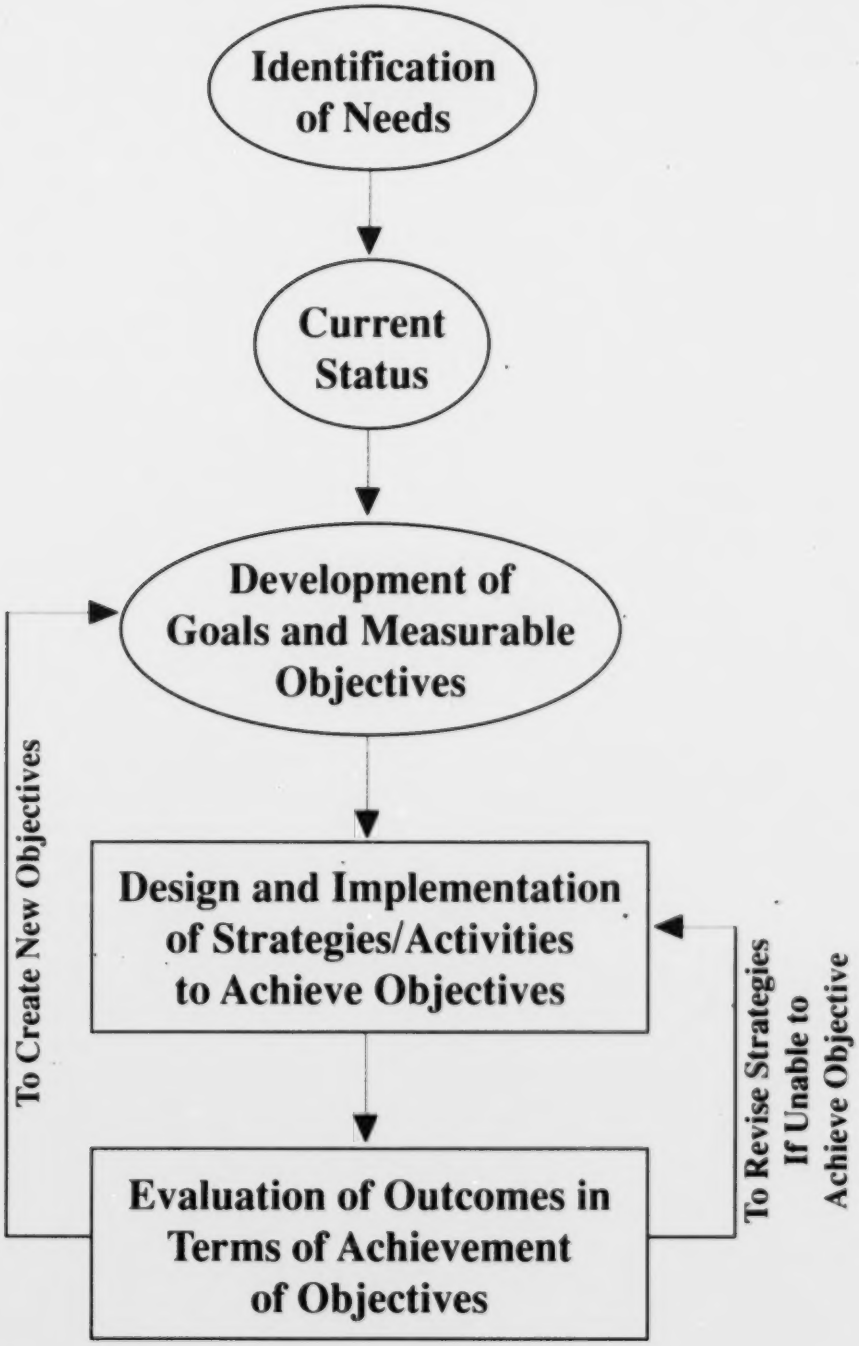
The initial planning effort included a report of the current status of environmental education in Arizona. To develop this, two primary methods were utilized. The first involved extensive input from the members of the Task Force. Because they were selected for their knowledge and interest in environmental education, they brought a wealth of information about and a critical analysis of existing statewide efforts. In addition, three questionnaires were developed and distributed to over 2,000 groups or individuals statewide. The results of these surveys were summarized and used in the development of goals and objectives.

Data from the needs assessment phase provided a clear foundation for the five general goals identified in the plan. Measurable objectives were then written to act as a basic framework for the action recommendations. This process ensured that the objectives were based on a proven need. This structure should allow users to fit their programs within the framework, evaluate the impact and support the plan's goals.

The assessment identified the current constraints which limit environmental education in Arizona. These constraints served as a crosscheck during the development of recommendations and are presented in the plan. One measure of the attainment of the plan's objectives is the degree to which these constraints are reduced. As such, they will serve as a basis for developing recommendations during future reviews of progress. Initial evaluation methods are also included in the plan. Evaluation of achievement of measurable objectives is critical to the ultimate success of the plan.

Goal Referenced Planning Model

(Figure 1)


Identification of Needs
Current Status
Development of Goals and Measurable Objectives
Design and Implementation of Strategies/Activities to Achieve Objectives
Evaluation of Outcomes in Terms of Achievement of Objectives
To Create New Objectives
To Revise Strategies If Unable to Achieve Objective

Arizona Environmental Education Goals

'Man has been on a spaceship all this time. It is a tiny little spaceship, only 8,000 miles in diameter.... And yet this tiny spaceship is so superbly designed that it provides everything man needs for his journey through space.' R. Buckminster Fuller

Pursuit of the following goals should accomplish the legislative intent of the Arizona Environmental Education Act: to develop an integrated environmental education program that achieves "awareness of students and the general public" that is "thorough, continuous and meaningful." Toward this end, the primary goals of environmental education in Arizona are:

- **Each individual should have a basic understanding of the environmental sciences.**
  Natural systems support all life, and it is critical that children and adults understand the basic ecological and other scientific principles by which these systems operate.

- **Each individual should understand the interrelationships between human actions and the environment.**
  Humans are a part of natural systems, and personal and societal choices have positive and negative effects on local and global environments.

- **Environmental education should be integrated into all school curriculums.**
  Environmental education belongs as an integral component or thematic bridge across all programs of study in public and private schools, from the preschool to postgraduate level.

- **Diverse environmental education opportunities should be available to the general public.**
  The general public, including Arizona residents and visitors, deserves expanded environmental learning opportunities that are stimulating as well as educational.

- **Environmental education in Arizona should be a cooperative venture, coordinated at all levels within the state and with national and international networks.**
  Increased communication and cooperation among the many public agencies and private organizations involved in environmental education contributes to more efficient use of available resources and more effective, balanced programs.

Arizona Environmental Education Objectives

"There is a need for sympathy, for sensitivity, and for understanding in environmental education. But that need can best be met through a concerted effort to build a solid conceptual base." Verne N. Rockcastle

This section of the Comprehensive Plan is divided into two parts. The first, found below, lists the 14 objectives developed by the Task Force. The second lists the same objectives with the recommendations which we believe will begin accomplishing the objectives.

Objective 1: To coordinate environmental education efforts among all public and private agencies, organizations and educational institutions.

Objective 2: To begin operation of a statewide network for environmental education.

Objective 3: To develop policy documents recognizing the importance of environmental education and establish program guidelines to implement ARS 15-706.

Objective 4: To coordinate research in environmental education among public and private agencies, organizations and educational institutions.

Objective 5: To identify diverse funding sources and direct allocation of available funds for environmental education in Arizona.

Objective 6: To create models of environmental responsibility at schools and other public facilities.

Objective 7: To implement a comprehensive program integrating environmental education throughout the kindergarten through twelfth grade curriculum in support of ARS 15-706 by 1994.

Objective 8: To provide training in environmental education as a part of preservice and graduate-level teachers' course work to implement ARS 15-1643 by 1993.

Objective 9: To implement an integrated program of teacher in-service training in environmental education by 1993.

Objective 10: To integrate environmental education into all post-secondary degree programs in Arizona by 1994.

Objective 11: To assess Arizona's environmental education programs on a regular basis beginning in 1995.

Objective 12: To improve communication between agencies, organizations and the media and expand coverage of environmental issues and environmental education.

Objective 13: To create new and utilize existing recognition programs which support innovative or outstanding efforts in environmental education.

Objective 14: To establish a body to pursue full implementation of this comprehensive environmental education plan for Arizona.

Objective 1: To coordinate environmental education efforts among all public and private agencies, organizations and educational institutions.

The Task Force recommends that:

1.1 The Environmental Education Advisory Council facilitate coordination among public and private agencies, organizations and educational institutions involved in environmental education.

1.2 The Environmental Education Advisory Council encourage intergovernmental agreements and memorandums of understanding between educational institutions; private organizations; and local, state and federal agencies.

1.3 All education institutions, agencies and organizations be encouraged to develop creative approaches to environmental education, such as integrating school programs with technical research projects.

1.4 Local, state and federal agencies examine their respective roles and involvement in environmental education and develop official plans of action that contribute to thorough, continuous and meaningful environmental awareness for both the formal education system and the general public.

1.5 Labor, industry, business and private organizations participate in environmental education activities by providing educationally sound services to the formal education system and by serving as an integral link to those outside the formal education system.

1.6 Private organizations examine their respective roles and involvement in environmental education and develop official plans of action.

1.7 The Arizona Department of Education utilize the Interagency Committee, the Arizona Association for Learning in and about the Environment, and other appropriate organizations as technical resources in the development, implementation and assessment of the State Board of Education's Environmental Education Program Guidelines.

1.8 The Arizona Department of Education and Environmental Education Advisory Council ensure that a statewide series of workshops on the Comprehensive Plan and on integrating the Environmental Education Program Guidelines into programs for schools is conducted for representatives of public agencies and private organizations by July 1994.

1.9 The Interagency Committee and Environmental Education Advisory Council ensure that a statewide series of workshops on the Comprehensive Plan and on integrating the Framework for Environmental Literacy into non-formal programs for the public is conducted for representatives of public agencies and private organizations by July 1994.

Objective 2: To begin operation of a statewide network for environmental education.

The Task Force recommends that:

2.1 Regional environmental education resource centers be developed throughout Arizona, with an immediate goal of three sites and new sites added as funding and resources expand.

2.2 The goals of the resource centers include working to coordinate regional environmental education efforts; identify target audiences; aid development of programs and materials; organize a speakers' bureau and program bureau; and disseminate information on programs and materials for schools, the public and environmental educators.

2.3 Local committees, including representatives of public and private agencies, organizations and educational institutions, oversee the planning, funding, organization, development and management of regional resource centers.

2.4 Resource centers coordinate among themselves and network with regional, national and international environmental education efforts.

2.5 Resource centers and others explore diverse and innovative means of providing environmental education materials (e.g., bookmobiles, chambers of commerce, tourism offices, computer networks).

2.6 Resource centers and others make a special, ongoing effort to develop and disseminate multilingual and multicultural materials for all identified user groups.

2.7 Local committees cooperate with the Environmental Education Advisory Council to ensure that scientifically valid, balanced information is provided by the resource centers.

2.8 The Arizona Department of Education expand the EdLink system to provide access to information on environmental education resources, environmental issues and environmental research.

2.9 A statewide telephone network and/or computer database be established that incorporates the EdLink system and provides services for students, teachers, the public and providers of formal or non-formal environmental education programs.

2.10 Access to the network and database be available through the regional resource centers.

Objective 3: To establish policy documents recognizing the importance of environmental education and establish program guidelines to implement ARS 15-706.

The Task Force Recommends that:

3.1 The State Board of Education endorse its existing policy regarding environmental education as a priority issue and communicate this to county school superintendents and all local school boards and administrators.

3.2 The State Board of Education endorse the State Board of Education's Environmental Education Program Guidelines by June 30, 1992.

3.3 The county school superintendents and local school boards actively support local school district environmental education activities and provide appropriate assistance.

3.4 Appropriate public agencies and private organizations adopt formal policies acknowledging the need for environmental education and the value of integrating it throughout their public information or other programs.

Objective 4: To coordinate research in environmental education among public and private agencies, organizations and educational institutions.

The Task Force recommends that:

4.1 Cooperative research ventures in environmental education be formed between universities and appropriate public agencies or private organizations.

4.2 Universities, agencies and organizations cooperate in developing and implementing long term, multi-unit, environmental research projects.

4.3 Cooperative research ventures develop programs to encourage the public to witness and participate in environmental research.

4.4 An educational component be incorporated in appropriate environmental research and suitable levels of funding be planned into project budgets.

4.5 The Environmental Education Advisory Council facilitate coordination among universities, agencies and organizations conducting research in environmental education.

Objective 5: To identify diverse funding sources and direct allocation of available funds for environmental education in Arizona.

The Task Force recommends that:

5.1 A database of appropriate funding sources for formal and non-formal environmental education programs be developed and maintained by either the Arizona Department of Education or a central resource center.

5.2 All regional resource centers provide access to the database on environmental education funding sources.

5.3 An educational component be included in all appropriate environmental legislation and suitable levels of funding be provided to a specific lead state agency.

5.4 A comprehensive funding package to adequately support the Arizona Department of Education's environmental education program be developed and submitted to the Legislature and Governor by September 1992.

5.5 The Interagency Committee and Environmental Education Advisory Council actively promote the environmental license plate program beginning in January 1993.

5.6 A consortium of organizations, the Arizona Department of Education, and state agencies be formed to solicit EPA Environmental Education funds as they are available.

5.7 The Arizona Heritage Fund in Arizona State Parks and in the Arizona Game and Fish Department be used to support environmental education objectives identified in this Comprehensive Plan.

5.8 An environmental education fund be created under the direction of the Environmental Education Advisory Council to provide grants or other monies to individuals and to public and private agencies, organizations and educational institutions for developing or implementing environmental education programs.

Objective 6: To create models of environmental responsibility at schools and other public facilities.

The Task Force recommends that:

6.1 Public agencies and education institutions adopt a formal policy of integrating resource conservation and environmentally appropriate technologies in the design and operation of all facilities (a policy of "rethink, reduce, reuse, recycle").

6.2 Public agencies and educational institutions give cost preference, when feasible, to recycled materials and other environmentally responsible supplies and equipment.

6.3 Public agencies and educational institutions serve as community models by actively demonstrating water and energy conservation, integrated pest management, native plant landscaping and other environmentally appropriate practices, as possible.

6.4 School site conservation activities be matched to the curriculum and involve all school groups to provide hands-on learning experiences.

6.5 All universities and colleges encourage and implement campus-wide environmental education and resource conservation programs to increase student awareness and complement environmental education taught in all degree programs.

6.6 Public agencies and educational institutions conduct an annual audit of their operating procedures and eliminate existing or potential environmental hazards (e.g., chemical use or storage, food or water contaminants).

Objective 7: To implement a comprehensive program to integrate environmental education throughout the kindergarten through twelfth grade curriculums in support of ARS 15-706 by 1994.

The Task Force recommends that:

7.1 Environmental education be integrated into existing curriculums not as a separate discipline but as an interdisciplinary instructional strategy that augments the curriculum and essential skills.

7.2 All school districts in Arizona adopt the State Board of Education's Environmental Education Program Guidelines.

7.3 The Arizona Department of Education establish and maintain at least one environmental education instructional specialist position beginning January 1992.

7.4 The Arizona Department of Education's environmental education specialist(s) be housed in the Curriculum and Instruction Unit.

7.5 The Arizona Department of Education position(s) in environmental education be converted to its base state FTE load by July 1993.

7.6 The Arizona Department of Education's environmental education specialist(s) cooperate with other curriculum specialists to develop and distribute grade specific models on how to integrate environmental education throughout the curriculum

7.7 The Arizona Department of Education ensure that a statewide series of workshops on the State Board of Education's Environmental Education Program Guidelines reach representatives of every school, community college and university by July 1994.

7.8 Representatives of each school district and individual school attend the workshops conducted by the Arizona Department of Education on the State Board of Education's Environmental Education Program Guidelines by July 1994.

7.9 Specific questions on basic ecological principles, environmental sciences, environmental education techniques, and methods of teaching environmental issues be integrated into the Arizona state teachers exam by July 1, 1993.

Objective 8: To provide training in environmental education as a part of preservice and graduate level teachers' course work to implement ARS 15-1643 by 1993.

The Task Force recommends that:

8.1 Each university under the jurisdiction of the Arizona Board of Regents provide plans to the Legislature on how it will implement ARS 15-1643 (1).

8.2 The components of the Comprehensive Plan with its Appendices, the State Board of Education's Environmental Education Program Guidelines and the Environmental Education Handbook be presented to all university students pursuing education degrees.

8.3 Representatives of the education faculty at each community college and university attend the workshops conducted by the Arizona Department of Education on the State Board of Education's Environmental Education Program Guidelines.

Objective 9: To implement an integrated program of teacher in-service training in environmental education by 1993.

The Task Force recommends that:

9.1 The Arizona Department of Education develop minimum workshop standards for teacher in-service training in environmental education by January 1993.

9.2 In-service training in environmental education encompass environmental education techniques, principles of ecology and other environmental sciences, methods of teaching environmental issues, methods of integrating environmental studies in existing curriculums, environmental education techniques, and the State Board of Education's Environmental Education Program Guidelines.

9.3 The Arizona Department of Education, Board of Regents, local school districts and interested agencies and organizations cooperate in providing a diversity of teacher in-service training programs which incorporate district or university credit and mechanisms of teacher support.

9.4 The Arizona Department of Education sponsor and conduct an annual teachers' academy on environmental education beginning in 1993.

9.5 The Arizona Department of Education maintain an information base through EdLink of in-service training opportunities available throughout the state.

9.6 The Arizona Department of Education and the universities develop a course to assist teachers who have moved to Arizona prepare for the environmental education component of the Arizona State teachers exam by 1994.

Objective 10: To integrate environmental education into all postsecondary degree programs in Arizona by 1994.

The Task Force recommends that:

10.1 The Board of Regents and Community College Board brief deans, provosts and other appropriate personnel on relevant components of the Environmental Education Act and Comprehensive Plan by July 1992.

10.2 Each community college and university draft a summary of existing environmental education courses, projects and ongoing research for submission to the Board of Regents and Community College Board by July 1992.

10.3 The Board of Regents and Community College Board develop guidelines for integration of environmental education in the Transfer General Education Core Curriculum and undergraduate and graduate degree programs of all schools and departments by July 1, 1993.

10.4 The Board of Regents and Community College Board utilize the Framework for Environmental Literacy and other appropriate existing resources in developing said guidelines.

10.5 Each community college and university incorporate environmental education into all undergraduate and graduate degree programs by July 1994.

10.6 Each university under jurisdiction of the Board of Regents conduct a feasibility study on offering interdisciplinary degree programs or minors in environmental education at the undergraduate and graduate levels by July 1993.

10.7 The community colleges and universities of Arizona provide courses for the public that contribute toward thorough, continuous and meaningful environmental awareness.

Objective 11: To assess Arizona's environmental education programs on a regular basis beginning in 1995.

The Task Force recommends that:

11.1 The Senate and House Environment Committees hold an annual joint hearing to review the status of environmental education in Arizona and review progress in implementation of the Comprehensive Plan.

11.2 The State Board of Education develop mechanisms and criteria for evaluating the effectiveness of school district environmental education programs by July 1993.

11.3 The State Board of Education's Environmental Education Program Guidelines be integrated into the state assessment program (ASAP) at all levels by July 1994.

11.4 An assessment methodology be made available to evaluate student involvement, action and responsibility by 1995.

11.5 The Arizona Department of Education complete a baseline assessment of student knowledge and attitudes about the environment by July 1, 1994 and complete a follow up assessment every five years.

Objective 12: To improve communication between agencies, organizations and the media and expand coverage of environmental issues and environmental education.

The Task Force recommends that:

12.1 The Governor host an annual mini-summit on environmental education for the electronic and print media in Arizona to discuss interaction between the media and groups involved in environmental education and a synopsis of this Comprehensive Plan.

12.2 All Arizona publishers and broadcasters be encouraged to provide space or time for ongoing coverage of environmental issues.

12.3 Environmentally-oriented organizations or agencies make personal contacts with the media to improve coverage of environmental issues and environmental education programs.

12.4 The Interagency Committee coordinate training opportunities for public agencies on how to work with the media.

12.5 The Commission on the Arizona Environment, Environmental Education Advisory Council, and Interagency Committee serve as liaisons between agencies, organizations and the media to encourage ongoing coverage of environmental issues and events.

12.6 Mass communication technologies be used to increase awareness of environmental issues and promote environmental education.

12.7 Public access television be used to increase awareness of environmental issues and to promote environment education.

Objective 13: To create new and utilize existing recognition programs which support innovative or outstanding efforts in environmental education.

The Task Force recommends that:

13.1 The Governor establish a statewide annual awards program to recognize efforts in formal and non-formal environmental education by July 1993.

13.2 The awards program recognize efforts at schools, community colleges and universities at all levels from the individual and classroom to the institutional and district.

13.3 The awards program recognize efforts by public agencies and private organizations at all levels from the individual to the institutional.

13.4 A list of existing recognition programs related to environmental education or action be compiled by July 1992.

13.5 Coordination and cooperation among groups offering recognition for environmental education be encouraged.

13.6 A program to identify model environmental education programs and provide financial incentives be initiated by July 1995.

13.7 An annual Arizona student summit on environmental education to encourage positive action and sharing of successful models be established by July 1995.

13.8 A plan for sharing model environmental education programs (formal and non-formal) be created and implemented by July 1995.

Objective 14: To establish a body to pursue full implementation of this comprehensive environmental education plan for Arizona.

The Task Force recommends that:

14.1 An Environmental Education Advisory Council (proposed name) be established to advise and assist the Governor and Legislature in implementing this Comprehensive Plan.

14.2 The Environmental Education Advisory Council report directly to the Governor.

14.3 Membership of the Environmental Education Advisory Council be no more than nine individuals with representation from public and private agencies, organizations and educational institutions throughout Arizona.

14.4 The Environmental Education Advisory Council maintain and distribute an environmental education handbook.

"Environmental Education is... aimed at producing citizens who are environmentally effective... Knowledgeable concerning the environment and its degradation...; skilled in... techniques in a lefelong pursuit of environmental quality for all living things." Clay Schoenfeld

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Comprehensive Plan Recommendations

"I have five senses you must reach if I'm to learn and you're to teach. With taste, touch, smell, and sight so clear, why must I receive all sense by ear?" C. Harold Fabler

This section of the Comprehensive Plan is divided into four sections: Formal Education, Non-formal Education, Funding and Legislative/Policy Needs. All of the 92 recommendations found in Section V are found in the discussions on Formal and Non-formal Education. In these presentations, the recommendations are assigned to the entities which the Task Force feels should be responsible for carrying out the action. Consequently, several recommendations are found more than once. In the Funding and Legislative/Policy Needs discussions, all of the recommendations dealing with these two important support items are grouped by category.

A. Formal Education

"I sincerely believe that for the child, and for the parent seeking to guide him, it is not half so important to know as to feel. If facts are the seeds that later produce knowledge and wisdom, then the emotions and the impressions of the senses are the fertile soil in which the seeds must grow. The years of early childhood are the time to prepare the soil. Once the emotions have been aroused--a sense of the beautiful, the excitement of the new and unknown, a feeling of sympathy, pity, admiration or love--then we wish for the knowledge about the object of our emotional response.... It is more important to pave the way for the child to want to know than to put him on a diet of facts he is not ready to assimilate." Rachel Carson

Status - Environmental education is happening in many Arizona schools. The programs are not as coordinated or numerous as they might be, but are rich and diverse. At the kindergarten through twelfth grade levels, education about the environment is found where classroom teachers have taken the initiative to incorporate it into the curriculum. At the university level, environmental education programs are usually found in an education and/or natural resource department. Here, individual professors have developed class content based on their own interest rather than in response to an administrative policy. The overall quality of these programs is generally quite good in spite of limited coordination, funds and school support.

Environmental education has not been a required component of the curriculum in most schools. Because of this, many administrators have not encouraged education about the environment and many teachers have not incorporated it onto their teaching efforts. In other cases, administrators have supported environmental education but have been unable to provide significant funding. This has lead to restricted programs and kept environmental education activities primarily at a grass-roots level. The passage of the Arizona Environmental Education Act changes this.

At the state level, there is no clear coordination of environmental education activities . In the past, the Arizona Department of Education had not chosen to take a leadership role in helping school districts develop integrated environmental education programs. No university has established a comprehensive environmental education training program for classroom teachers or other students. Consequently, duplication of efforts occurs among schools or districts and networks to share quality programs are limited.

Among existing programs, the most successful have utilized the interdisciplinary nature of environmental education. They emphasize integration of environmental education across existing curriculums and

correlate it with established essential learning skills. They do not attempt to force it into the general curriculum as a new discipline. Teachers involved in these programs take advantage of in-service training opportunities made available by various agencies and organizations. This training helps teachers improve the structure and implementation of their programs.

The majority of existing environmental education programs emphasize awareness and content information. A small percentage provide leaning opportunities which include responsible action. Such efforts generally involve recycling, tree planting and community cleanup. These projects are led by individual teachers or school groups who sustain the effort from year to year. Several of these programs could serve as models worthy of recognition and duplication.

Interest in doing something constructive to "help" the environment is growing. A variety of opportunities exist to involve students in action projects. Teachers need minimal training and the encouragement of the community and school district in order to incorporate action into the learning cycle.

Existing support for environmental education programs comes through a variety of methods. For the most part, the local school or district provides funding and facilities. Much of the materials, programs and people resources comes from agencies and organizations outside the formal educational system. The formal training courses available often are sponsored by the district or a university but taught by agency staff or organization members.

Little formal evaluation of existing environmental education programs has been done in Arizona. In *An Assessment of Environmental Education in Arizona*, April 1991 prepared by this Task Force, the summary of responses from teachers and administrators stated that "the perception of environmental education programs in this state is that they are not very effective in preparing students or the public to deal with contemporary environmental issues. In general, the feeling expressed was that environmental education is extremely important. Until it is given a higher priority, both in the curriculum and financially, it will remain a hit or miss program in schools. One administrator wrote, 'Please don't mandate additional requirements without additional funding. We've stressed our budget and staff too much now. Yet, there is little that we teach of any greater significance than environmental education.'"

Constraints - Predictably, the *Assessment* identified the major constraints felt to be hindering environmental education as funding, time, curriculum restrictions and limited training. The *Assessment* further concluded that "Inadequate or poorly correlated materials and a lack of training in environmental concepts and teaching methods make integrating environmental education into the curriculum difficult for many teachers. Lack of time, both for planning and implementation, is seen as the major obstacle to a stronger program." Funding for basic educational resources is limited while additional funding for field trips or special action projects is almost nonexistent in most school districts.

At the universities, the primary problems also lie in time and funding. Another difficulty is inherent in the structure of university departments and degree programs. Because of the way they function, it is difficult to develop interdisciplinary environmental education programs. Competition for limited funding and pressure to enhance the standing of one's own department restricts faculty members interested in interdisciplinary programs. Parallel problems may exist between staff members of the same college or discipline area.

Because there has been a lack of clear direction and support for environmental education in Arizona, other programs often take precedence. Another constraint lies in the commonly held perception that environmental education is just another area of science and must be added to existing curriculums. This perception must be corrected. Environmental Education is an instructional strategy rather than a new discipline. Seen in this

light it may be integrated into all existing curriculum areas. Environmental education programs do not require extensive infusions of new funding to be implemented. This is evidenced by the current model programs found in Arizona. There is a strong need for a framework for environmental literacy to guide the development of programs.

From this viewpoint, the constraints on the development and implementation of effective environmental education programs in Arizona's formal education system are not as restrictive as they may seem. The following recommendations represent actions which can build a strong environmental education program in Arizona. The six entities assigned responsibility below are the Arizona Department of Education, Arizona State Board of Education, Arizona Board of Regents, Community College Board, County school superintendents, public and private schools/school districts, and universities and community colleges. By implementing these and the recommendations in the Non-formal Education section, the Task Force believes that Arizona will become a national leader in the environmental education arena.

Recommendations - Task Force recommendations for:

Arizona Department of Education

- The Arizona Department of Education establish and maintain at least one environmental education instructional specialist position beginning January 1, 1992.
- The Arizona Department of Education position(s) in environmental education be converted to its base state FTE load by July 1, 1993.
- The Arizona Department of Education environmental education specialist(s) be housed in the Curriculum and Instruction Unit.
- Environmental education be integrated into existing curriculum not as a separate discipline but as an interdisciplinary instructional strategy that augments the curriculum and essential skills.
- The Arizona Department of Education ensure that a statewide series of workshops on the State Board of Education's Environmental Education Program Guidelines reach representatives of every school, community college and university by June 30, 1994.
- The Arizona Department of Education's environmental education specialist(s) cooperate with other curriculum specialists to develop and distribute grade specific models on how to integrate environmental education throughout the curriculum.
- The State Board of Education's Environmental Education Program Guidelines be integrated into the state assessment program (ASAP) at all levels by July 1, 1994.
- An assessment methodology be made available to evaluate student involvement, action and responsibility by 1995.
- The Arizona Department of Education complete a baseline assessment of student knowledge and attitudes about the environment by July 1, 1994 and complete a follow-up assessment every five years.
- Specific questions on basic ecological principles, environmental sciences, environmental education techniques and methods of teaching environmental issues be integrated into the Arizona state teacher's exam by July 1, 1993.

- The Arizona Department of Education develop minimum workshop standards for teacher in-service training in environmental education by January 1993.

- In-service training in environmental education encompass environmental education techniques, principles of ecology and other environmental sciences, methods of teaching environmental issues, methods of integrating environmental studies in existing curriculums, environmental education techniques and the State Board of Education's Environmental Education Program Guidelines.

- The Arizona Department of Education, Board of Regents, local school districts and interested agencies and organizations cooperate in providing a diversity of teacher in-service training programs which incorporate district or university credit and mechanisms of teacher support.

- The Arizona Department of Education maintain an information base through EdLink of in-service training opportunities available throughout the state.

- The Arizona Department of Education sponsor and conduct an annual teachers' academy on environmental education beginning in 1993.

- The Arizona Department of Education and the universities develop a course to assist teachers who have moved to Arizona prepare for the environmental education component of the Arizona state teacher's exam by 1994.

- A program to identify model environmental education programs and provide financial incentives be initiated by July 1995.

- A database of appropriate funding sources for formal and non-formal environmental education programs be developed and maintained by either the Arizona Department of Education or a central resource center.

- A comprehensive funding package to adequately support the Arizona Department of Education's environmental education program be developed and submitted to the Legislature and Governor by September 1992.

- A consortium of organizations, the Arizona Department of Education, and state agencies be formed to solicit EPA Environmental Education funds as they are available.

- The Arizona Department of Education expand the EdLink system to provide access to information on environmental education resources, environmental issues and environmental research.

- A statewide telephone network and/or computer database be established that incorporates the EdLink system and provides services for students, teachers, the public and providers of formal and non-formal environmental education programs.

- The Arizona Department of Education utilize the Interagency Committee on Environmental Education, The Arizona Association for Learning in and about the Environment and other appropriate organizations as technical resources in the development, implementation and assessment of the State Board of Education's Environmental Education Program Guidelines.

- The Arizona Department of Education and Environmental Education Advisory Council ensure that a statewide series of workshops on the Comprehensive Plan on integrating the Environmental Education Program Guidelines into programs for schools is conducted for representatives of public agencies and private organizations by July 1994.

Arizona State Board of Education

- The State Board of Education endorse its existing policy regarding environmental education as a priority issue and communicate this to county school superintendents and all local school boards and administrators.
- The State Board of Education endorse the State Board of Education's Environmental Education Program Guidelines by June 30, 1992.
- The State Board of Education develop mechanisms and criteria for evaluating the effectiveness of school district environmental education programs by July 1993.

Arizona Board of Regents and Community College Board

- The Board of Regents and Community College Board brief deans, provosts and other appropriate personnel on relevant components of the Environmental Education Act and Comprehensive Plan by July 1992.
- The Board of Regents and Community College Board develop guidelines for integration of environmental education in the Transfer General Education Core Curriculum and undergraduate and graduate degree programs of all schools and departments by July 1, 1993.
- The Board of Regents and Community College Board utilize the Framework for Environmental Literacy and other appropriate existing resources in developing guidelines.
- The Arizona Department of Education, Board of Regents, local school districts, and interested agencies and organizations cooperate in providing a diversity of teacher in-service training programs which incorporate district or university credit and mechanisms of teacher support.

County School Superintendents

- The county school superintendents and local school boards actively support local school district environmental education activities and provide appropriate assistance.

Public and Private Schools/School Districts

- All school districts in Arizona adopt the State Board of Education's Environmental Education Program Guidelines.
- Representatives of each school district and individual school attend the workshops conducted by the Arizona Department of Education on the State Board of Education's Environmental Education Program Guidelines by July 1994.
- The Arizona Department of Education, Board of Regents, local school districts, and interested agencies and organizations cooperate in providing a diversity of teacher in-service training programs which incorporate district or university credit and mechanisms of teacher support.
- Public agencies and educational institutions serve as community models by actively demonstrating water

and energy conservation, integrated pest management, native plant landscaping and other environmentally appropriate practices, as possible.

- School site conservation activities be matched to the curriculum and involve all school groups to provide hands-on learning experiences.

- Public agencies and educational institutions conduct an annual audit of their operating procedures and eliminate existing or potential environmental hazards (e.g., chemical use or storage, food or water contaminants).

- Public agencies and educational institutions adopt a formal policy of integrating resource conservation and environmentally appropriate technologies in the design and operation of all facilities (a policy of "rethink, reduce, reuse, recycle").

- Public agencies and educational institutions give cost preference, when feasible, to recycled materials and other environmentally responsible supplies and equipment.

- An Arizona student summit on environmental education to encourage positive action and sharing of successful models be established by July 1995.

- All educational institutions, agencies and organizations be encouraged to develop creative approaches to environmental education, such as integrating school programs with technical research projects.

Universities and Community Colleges

- Representatives of the education faculty at each community college and university attend the workshops conducted by the Arizona Department of Education on the State Board of Education's Environmental Education Program Guidelines.

- Each university under jurisdiction of the Arizona Board of Regents provide plans to the Legislature on how they will implement ARS 15-1643 (1).

- The components of the Comprehensive Plan with it Appendices, the State Board of Education's Environmental Education Program Guidelines and Environmental Education Handbook be presented to all university students pursuing education degrees.

- Each university under the jurisdiction of the Board of Regents conduct feasibility studies on offering interdisciplinary degree programs or minors in environmental education at the undergraduate and graduate level by July 1993.

- Each community college and university draft a summary of existing environmental education courses, projects and ongoing research for submission to the Board of Regents and Community College Board by July 1992.

- Each community college and university incorporate environmental education into all undergraduate and graduate programs by July 1994.

- The Arizona Department of Education and the universities develop a course to assist teachers who have moved to Arizona prepare for the environmental education component of the Arizona state teacher's exam by 1994.

- Public agencies and educational institutions serve as community models by actively demonstrating water and energy conservation, integrated pest management, native plant landscaping and other environmentally appropriate practices, as possible.

- Public agencies and educational institutions conduct an annual audit of their operating procedures and eliminate existing or potential environmental hazards (e.g., chemical use or storage, food or water contaminants).

- Public agencies and educational institutions adopt a formal policy of integrating resource conservation and environmentally appropriate technologies in the design and operation of all facilities (a policy of "rethink, reduce, reuse, recycle").

- Public agencies and educational institutions give cost preference, when feasible, to recycled materials and other environmentally responsible supplies and equipment.

- All universities and colleges encourage and implement campus-wide environmental education and resource conservation programs to increase student awareness and complement environmental education taught in all degree programs.

- A consortium of organizations, the Arizona Department of Education and state agencies be formed to solicit EPA Environmental Education funds as they are available.

- Resource centers and others explore diverse and innovative means of providing environmental education materials (e.g., bookmobiles, chambers of commerce, tourism offices, computer networks).

- All education institutions, agencies and organizations be encouraged to develop creative approaches to environmental education, such as integrating school programs with technical research projects.

Evaluation Strategies - Methods to evaluate the effectiveness of environmental education programs are frequently complex and expensive. It is important, however, to begin a process. This will require developing an evaluation method for existing programs and incorporating an evaluation component into proposed programs. The complexity of the evaluation process will relate to the size and scope of the program.

Arizona has the opportunity to establish baseline information about environmental education utilizing ASAP (Arizona State Assessment Plan). By incorporating appropriate questions and environmental items into all levels of the assessment, we can acquire a comprehensive look at general student knowledge and skills. This baseline data may then be compared against future data. This will provide overall trends and a measure of effectiveness.

Expectations for rapid changes in knowledge and attitudes should not be set too high. The process of gaining environmental awareness and knowledge will take years. Ultimately it will be measured by the actions people take as individuals and as a society. The evaluation process must begin now, however, and move forward with clear direction.

B. Non-Formal Education

'That land is a community is the basic concept of ecology, but that land is to be loved and respected is an extension of ethics... All ethics so far evolved rest upon a single premise: That the individual is a mimber of a community of interdependent parts. His instincts prompt him to compete for his place in the community, but his ethics prompt him also to cooperate....'
Aldo Leopold

Status - Many private and public groups in Arizona have explicit objectives in environmental education. These groups include a wide variety of organizations; business; industries; media; and local, state and federal agencies. Because of this diversity of sources, a large mass of environmental education programs and materials are available to the public.

Publications, audiovisuals, media releases, workshops, programs and other formats are common methods used to transmit information. Learning experiences and materials are available at established locations, including offices, resource centers, visitor centers, museums, zoos, gardens and parks, as well as through special events, fairs, presentations and other outreach efforts. To some extent, these groups and their programs compete inadvertently for coverage by the electronic and print media.

"An Assessment of Environmental Education in Arizona", April 1991, revealed that 60 percent of the agencies sponsor some type of environmental education. A large percentage of the agencies' materials emphasize general environmental awareness rather than specific content information. Their efforts are aimed primarily at teachers, students and organizations. A major goal is for the audience to pass the information received on to others. The Interagency Committee on Environmental Education, established through the Arizona Environmental Education Act, has begun to coordinate agency efforts and thus is playing an important role in making more effective use of people and material resources.

In the private sector, the *Assessment* verified that businesses and industries vary considerably in terms of their involvement in environmental education. One of their most significant contributions is often financial support of programs and events sponsored or promoted by a non-profit group. When they are involved in producing program materials, business and industry generally do so through a consortium or commodity group rather than on an individual basis.

The tourism industry in Arizona is based largely on the scenic and natural wonders of the state. The *Assessment* revealed that many tour companies include environmental learning experiences in the tours they offer.

Non-profit organizations and institutions make significant efforts in environmental education. Many of these groups are established specifically to increase environmental awareness and understanding. Several have an additional objective of spawning citizen action on an issue. Their efforts range from conducting research to disseminating information to advocating specific positions on selected issues. They share information through such diverse means as publications, audiovisuals, media coverage, workshops or special programs. These organizations are often supported through donations from business and industry. Beneficiaries of their educational projects may be members or nonmembers and may include educators and youth as well as the general public.

The news media, and modern mass communication techniques in general, offer special opportunities in environmental education. Historically the media have covered special environmental events and helped raise public awareness of both the events and the environment. Recently, the media have begun to provide regular, on-going coverage of environmental issues and concerns.

Although research by universities, agencies and corporations provides an important source of information for environmental education materials, research results are seldom widely distributed among researchers, environmental educators or the public. Occasional joint research/education projects produce excellent results and reveal the worthwhile contributions that such ventures are able to make.

Because of the quantity of materials and multitude of sources, an individual searching for information often is overwhelmed and unable to find the most pertinent information. In addition, the material is highly variable in terms of its educational value and often reflects the philosophy or bias of the organization producing it. A few groups around the state have attempted to provide the needed service of organizing these diverse materials, presenting them in an balanced manner, and making them accessible to interested educators or the public. However, these groups currently work with only a fraction of the totality of environmental education materials, and their services are only available to a fraction of the population.

Constraints - In the non-formal arena, coordination and networking among the multitude of agencies, organizations, businesses, media and other groups providing environmental education is inadequate. This results in the inefficient use of resources. Some materials needlessly duplicate others, while another important area of inquiry is not covered. Users often experience confusion regarding how to access materials or how to find balanced, objective materials. Few directories exist to enable members of the public to find a source for specific information. A framework is needed to provide common direction and connections for all groups involved in environmental education.

Media coverage of environmental events or issues is often limited by profitability, audience appeal or competition with other news stories. The most significant environmental issues are likely to involve problems that grow by small, daily increments rather than escalate into sudden, unexpected disasters. This gradual growth rate of environmental problems often leads to the misconception by the media that these issues are not newsworthy. Many environmental stories originate with agencies or organizations and superficially appear to promote the originator rather than educate the public. Sponsors of programs to raise environmental awareness often remain unidentified in published stories.

In spite of the strong need for regional resource centers with a wide spectrum of environmental education services, funding for such centers is limited. This is further restricted by competition for the public's attention among the many groups dealing with the environment. Funding as a whole is simply spread too thin. The *Assessment* revealed that few agencies or organizations feel they have sufficient funding to do an adequate job. Many groups depend to a large degree on volunteers to achieve their environmental education goals and have limited or no staff.

Results of environmental research usually are published in academic or management journals and seldom are popularized. Scientists seldom interact directly with members of the public interested in their area of research. Most funding is task oriented, yet agencies or institutions involved in research often act as rivals and compete for funding. Inefficient use of limited funds and other resources may result. Finally, poor communication between researchers and the public acts to limit public support for research and limit public benefits from the research.

In summary, non-formal environmental education for residents and visitors in Arizona is constrained by several factors. These constraints impact the quantity and quality of programs, the types of program materials available, the efficiency of program distribution, and the ease of access for users. As a result, current environmental education efforts are able to achieve only limited success. The following recommendations represent actions which can build a strong environmental education program in Arizona. The 10 entities assigned responsibility are the: Governor, Legislature, Public Agencies and Private Organizations, Regional Resource Centers, Environmental Education Advisory Council, Interagency Committee on

Environmental Education, Media, Universities, Local Committees for Resource Centers, and Business and Industry. By implementing these and the recommendations in the Formal Education section, the Task Force believes that Arizona will become a national leader in the environmental education arena.

Recommendations - The following recommendations have been developed as solutions to the constraints limiting the effectiveness of non-formal environmental education programs in Arizona.

Governor

- The Governor host a mini-summit on environmental education for the electronic and print media in Arizona to discuss interaction between the media and groups involved in environmental education and synopsis of the Comprehensive Plan.
- The Governor establish a statewide annual awards program to recognize efforts in formal and non-formal environmental education by July 1993.
- The awards program recognize efforts at schools, community colleges and universities at all levels from the individual and classroom to the institutional and district.
- The awards program recognize efforts by public agencies and private organizations at all levels from the individual level to the institutional level.
- The Environmental Education Advisory Council report directly to the Governor.

Legislature

- An educational component be included in all appropriate environmental legislation and suitable levels of funding be provided to a specified lead state agency.
- The Senate and House Environment committees hold an annual joint hearing to review the status of environmental education in Arizona and review progress in implementation of this Comprehensive Plan.
- An Environmental Education Advisory Council (proposed name) be established to advise and assist the Governor and Legislature in implementing this Comprehensive Plan.
- The Environmental Education Advisory Council report directly to the Governor.
- Membership of the Environmental Education Advisory Council be no more than nine individuals with representation from public and private agencies, organizations and educational institutions throughout Arizona.
- The Environmental Education Advisory Council maintain and distribute an environmental education handbook.
- An educational component be incorporated in appropriate environmental research and suitable levels of funding be planned into project budgets.

Public Agencies and Private Organizations

- All educational institutions, agencies and organizations be encouraged to develop creative approaches to environmental education, such as integrating school programs with technical research projects.

- An educational component be incorporated in appropriate environmental research and suitable levels of funding be planned into project budgets.

- Local, state and federal agencies examine their respective roles and involvement in environmental education and develop official plans of action that contribute to thorough, continuous and meaningful environmental awareness for both the formal education system and the general public.

- Labor, industry, business and private organizations participate in environmental education activities by providing educationally sound services to the formal education system and by serving as an integral link to those outside the formal education system.

- Private organizations examine their respective roles and involvement in environmental education and develop official plans of action.

- Resource centers and others explore diverse and innovative means of providing environmental education materials (e.g., bookmobiles, chambers of commerce, tourism offices, computer networks).

- Resource centers and others make a special, ongoing effort to develop and disseminate multilingual and multi-cultural materials for all identified user groups.

- Appropriate public agencies and private organizations adopt formal policies acknowledging the need for environmental education and the value of integrating it throughout their public information or other programs.

- Cooperative research ventures in environmental education be formed between universities and appropriate public agencies or private organizations.

- Universities, agencies and organizations cooperate in developing and implementing long term, multi-unit, environmental research projects.

- Cooperative research ventures develop programs to encourage the public to witness and participate in environmental research.

- A consortium of organizations, the Arizona Department of Education and state agencies be formed to solicit EPA Environmental Education funds as they are available.

- The Arizona Heritage Fund in Arizona State Parks and in the Arizona Game and Fish Department be used to support environmental education objectives identified in this Comprehensive Plan.

- Public agencies and educational institutions adopt a formal policy of integrating resource conservation and environmentally appropriate technologies in the design and operation of all facilities (a policy of "rethink, reduce, reuse, recycle").

- Public agencies and educational institutions give cost preference, when feasible, to recycled materials and other environmentally responsible supplies and equipment.

- Public agencies and educational institutions serve as community models by actively demonstrating water and energy conservation, integrated pest management, native plant landscaping, and other environmentally appropriate practices, as possible.

- Public agencies and educational institutions conduct an annual audit of their operating procedures and eliminate existing or potential environmental hazards (e.g., chemical use or storage, food or water contaminants).

- The Arizona Department of Education, Board of Regents, local school districts, and interested agencies and organizations cooperate in providing a diversity of teacher in-service training programs which incorporate district or university credit and mechanisms of teacher support.

- Environmentally oriented organizations or agencies make personal contacts with the media to improve coverage of environmental issues and environmental education programs.

- Coordination and cooperation among groups offering recognition for environmental education be encouraged.

Regional Resource Centers

- Regional environmental education resource centers be developed throughout Arizona, with an immediate goal of three sites and new sites added as funding and resources expand.

- The goals of the resource centers include working to coordinate regional environmental education efforts, identify target audiences, aid development of programs and materials, organize a speakers' bureau and program bureau, and disseminate information on programs and materials for schools, the public and environmental educators.

- Resource centers coordinate among themselves and network with regional, national and international environmental education efforts.

- Resource centers and others explore diverse and innovative means of providing environmental education materials (e.g., bookmobiles, chambers of commerce, tourism offices, computer networks).

- Resource centers and others make a special, ongoing effort to develop and disseminate multilingual and multi-cultural materials for all identified user groups.

- A statewide telephone network and/or computer database be established that incorporates the EdLink system and provides services for students, teachers, the public, and providers of formal or non-formal environmental education programs.

- Access to the network and database be available through the regional resource centers.

- A database of appropriate funding sources for formal and non-formal environmental education programs be developed and maintained by either the Arizona Department of Education or a central resource center.

- All regional resource centers provide access to the database on environmental education funding sources.

Environmental Education Advisory Council

- The Environmental Education Advisory Council facilitate coordination among public and private agencies, organizations and educational institutions involved in environmental education.
- The Environmental Education Advisory Council encourage intergovernmental agreements and memorandums of understanding between educational institutions, private organizations and local, state and federal agencies.
- An annual Arizona student summit on environmental education to encourage positive action and sharing of successful models be established by July 1995.
- A plan for sharing model environmental education programs (formal and non-formal) be created and implemented by July 1995.
- The Environmental Education Advisory Council report directly to the Governor.
- The Environmental Education Advisory Council maintain and distribute an environmental education handbook.

Interagency Committee on Environmental Education

- The Interagency Committee on Environmental Education and Environmental Education Advisory Council ensure that a statewide series of workshops on the Comprehensive Plan and on integrating the Framework for Environmental Literacy in non-formal programs for the public is conducted for representatives of public agencies and private organizations by July 1994.
- The Interagency Committee on Environmental Education and Environmental Education Advisory Council actively promote the environmental license plate program beginning January 1993.
- The Interagency Committee on Environmental Education coordinate training opportunities for public agencies on how to work with the media.
- The Commission on the Arizona Environment, Environmental Education Advisory Council and Interagency Committee on Environmental Education serve as liaisons between agencies, organizations and the media to encourage coverage of environmental issues and events.

Media

- All Arizona publishers and broadcasters be encouraged to provide space or time for ongoing coverage of environmental issues.
- Mass communication technologies be used to increase awareness of environmental issues and promote environmental education.
- Public access television be used to increase awareness of environmental issues and to promote environmental education.

Universities and Community Colleges

- Local committees, including representatives of public and private agencies, organizations and educational institutions, oversee the planning, funding, organization, development and management of regional resource centers.

- Resource centers and others make a special, ongoing effort to develop and disseminate multilingual and multi-cultural materials for all identified user groups.

- Cooperative research ventures in environmental education be formed between universities and appropriate public agencies or private organizations,

- Universities, agencies and organization cooperate in developing and implementing long term, multi-unit, environmental research projects.

- Cooperative research ventures develop programs to encourage the public to witness and participate in environmental research.

- An educational component be incorporated in appropriate environmental research and suitable levels of funding be planned into project budgets.

- The community colleges and universities of Arizona provide courses for the public that contribute toward thorough, continuous and meaningful environmental awareness.

Local Committees for Resource Centers

- Local committees, including representatives of public and private agencies, organizations and educational institutions, oversee the planning, funding, organization, development and management of regional resource centers.

- Local committees cooperate with the Environmental Education Advisory Council to ensure that scientifically valid, balanced information is provided by the resource centers.

Business and Industry

- Private organizations examine their respective roles and involvement in environmental education and develop official plans of action.

- Labor, industry, business and private organizations participate in environmental education activities by providing educationally sound services to the formal education system and by serving as an integral link to those outside the formal education system and the general public.

Evaluation Strategies - It will be fairly easy to evaluate the implementation of many of the recommendations found in the Non-formal section. The Governor's staff, the Legislature, or any other evaluator may quickly read most of the recommendations and determine if they have been completed. There will be a few recommendations, however, which are of an on-going nature and a good deal of judgment will be required to decide if adequate or proper implementation is underway. It is the recommendation of the Task Force that

this form of evaluation be undertaken by the Senate and House Environment Committees at an annual joint hearing (Recommendation 11.1).

It will be much more difficult to measure the overall success of applying these recommendations and to determine if the intent of the Arizona Environmental Education Act has been accomplished. The format of such an evaluation needs to be professionally developed so as to properly measure the accumulated results of Arizona's environmental education program. One possibility is for visitors and citizens to be asked to respond to questionnaires or other query forms. These could be solicited in the media, by selective mailings, or following a specific program. If used in conjunction with a program, the state, the Interagency Committee on Environmental Education, a private organization, a business, or an agency might disseminate them. It is important that the format and results be shared with all groups involved in environmental education.

A process of this size could be very expensive, requiring a significant amount of development time and expense as well as continuous coordination. To reduce this cost, a department at one of the universities or community colleges might be asked to undertake the effort. Ideally some sort of data could be gathered within the next year or two in order to provide a baseline by which to measure progress as this Plan is implemented.

As indicated in the Formal Education section, expectations for rapid changes in knowledge and attitudes should not be set too high. The process of gaining environmental awareness and knowledge will take years. Ultimately it will be measured by the actions people take as individuals and as a society. The evaluation process must begin now, however, and move forward with clear direction.

C. Funding

'The universe is so successful, I simply want to learn its principles and apply them rather than to exploit it blindly and fear for survival.' R. Buckminster Fuller

Status - The Arizona Environmental Education Act establishes three funds to support the activities described in the bill. The first is the Arizona Department of Educations' Environmental Education Fund. It is to provide monies to the Department for personnel and other expenditures necessary to assist school districts in implementing environmental education programs and to provide training. Monies for this fund may come from legislative appropriations or donations from interested individuals and organizations.

A second is the Environmental Number Plate Fund to be collected by the Arizona Department of Transportation through the sale of environmental number plates. Monies in this fund will be transferred from the Department of Transportation through the State Treasurer to the Department of Education for disbursement to environmental education programs. The Governor's Office has announced a competition from which a design for this plate will be selected.

The third is the Arizona Environmental Education Task Force Fund to help carry out the duties of the Task Force. Monies for this fund are to come from private individuals and organizations. After June 30, 1992, all monies in this fund will revert to the Arizona Department of Education's Environmental Education Fund.

As of December 31, 1991, about $110,000 had been donated to the first and third funds. The majority of this money came from the Arizona Game and Fish Heritage Fund. No monies will accrue in the Environmental Number Plate Fund until the plate is actually on sale.

The Task Force did not attempt to assess the amount of monies spent in Arizona for environmental education. It is apparent, however, that the total invested in this effort is significant and that it supports a wide variety of programs and material production.

Constraints - Financial investment in environmental education generally occurs in two categories. An agency, organization, or business spends part of its budget to support their specific mission or an individual, business, or organization donates to support a non-profit organization's mission or special programs. Currently, the competition for donated dollars is high. The monies spent often are targeted to a narrow focus or cause rather than for environmental education as a whole. The monies from the Heritage Fund were specifically designated for establishing an environmental education information resource system at the Department of Education and for printing the reports produced by the Task Force.

In the following list, we have two groups of recommendations. The first indicates potential or existing sources of funds and the second represents specific actions for an agency requiring new funds. We have not attempted to prioritize the actions because some may qualify for some sources of funds and not for others. They are all important to the end result of creating a strong environmental education program in Arizona.

Recommendations - Sources of funds:

- An educational component be incorporated in appropriate environmental research and suitable levels of funding be planned into project budgets.
- A database of appropriate funding sources for formal and non-formal environmental education programs be developed and maintained by either the Arizona Department of Education or a central resource center.
- All regional resource centers provide access to the database on environmental education funding sources.
- An educational component be included in all appropriate environmental legislation and suitable levels of funding be provided to a specified lead state agency.
- A comprehensive funding package to adequately support the Arizona Department of Education's environmental education program be developed and submitted to the Legislature and Governor by September 1992.
- The Interagency Committee and Environmental Education Advisory Council actively promote the Environmental License Plate program beginning in January 1993.
- A consortium of organizations, the Arizona Department of Education and state agencies be formed to solicit EPA Environmental Education funds as they are available.
- The Arizona Heritage Fund in Arizona State Parks and in the Arizona Game and Fish Department be used to support environmental education objectives identified in the Comprehensive Plan.
- An environmental education fund be created under the direction of the Environmental Education Advisory Council to provide grants or other monies to individuals and to public and private agencies, organizations and educational institutions for developing or implementing environmental education programs.
- Labor, industry, business and private organizations participate in environmental education activities by providing educationally sound services to the formal education system and by serving as an integral link to those outside the formal education system.

Actions needing new funds:

- Regional environmental education resource centers be developed throughout Arizona, with an immediate goal of three sites and new sites added as funding and resources expand.

- A comprehensive funding package to adequately support the Arizona Department of Education's environmental education program be developed and submitted to the Legislature and Governor by September 1992.

- The Arizona Department of Education expand the EdLink system to provide access to information on environmental education resources, environmental issues and environmental research.

- A statewide telephone network and/or computer database be established that incorporates the EdLink system and provides services for students, teachers, the public and providers of formal or non-formal environmental education programs.

- The Arizona Department of Education position(s) in environmental education be converted to its base state FTE load by July 1993.

- Public agencies and educational institutions give cost preference, when feasible, to recycled materials and other environmentally responsible supplies and equipment.

- The Governor host an annual mini-summit on environmental education for the electronic and print media in Arizona to discuss interaction between the media and groups involved in environmental education and a synopsis of this Comprehensive Plan.

- The Governor establish a statewide annual awards program to recognize efforts in formal and non-formal environmental education by July 1993.

- A program to identify model Environmental Education programs and provide financial incentives be initiated by July 1995.

- The Environmental Education Advisory Council maintain and distribute an environmental education handbook.

D. Legislative/Policy Needs

"... an environmentally literate citizenry... and continued environmental education programs, will make it possible to develop new knowledge and skills, values and attitudes, in a drive toward a better quality of environment, and, indeed, toward a higher quality of life for present and future generations...." William B. Stapp

By passing the Arizona Environmental Education Act, Arizona became one of only a handful of states who have recognized the need for and importance of creating a strong environmental education program. Although additional supportive legislation may need to be passed or policies established to fully implement this Comprehensive Plan, the Task Force desires that only those which are absolutely essential be created.

The following list is split into three sections. The first represents those recommendations which may need legislation, the second those which may require new policy, and the third those reports to be provided to the Legislature.

Recommendations - Possible legislation

- Local, state and federal agencies examine their respective roles and involvement in environmental education and develop official plans of action that contribute to thorough, continuous and meaningful environmental awareness for both the formal education system and the general public.

- Regional environmental education resource centers be developed throughout Arizona, with an immediate goal of three sites and new sites added as funding and resources expand. (See additional recommendations under Objective 2 which further define the responsibilities of the resource centers.)

- An educational component be included in all appropriate environmental legislation and suitable levels of funding be provided to a specified lead state agency.

- An Environmental Education Advisory Council (proposed name) be established to advise and assist the Governor and Legislature in implementing this Comprehensive Plan. (See Recommendations 5.8, 14.2 and 14.3 which further define the role and support for this Council.)

- The Arizona Department of Education position(s) in environmental education be converted to its base site FTE load by July 1993.

Possible policy:

- The Environmental Education Advisory Council facilitate coordination among public and private agencies, organizations and educational institutions involved in environmental education.

- The Environmental Education Advisory Council encourage intergovernmental agreements and memorandums of understanding between educational institutions; private organizations; and local, state, and federal agencies.

- Cooperative research ventures in environmental education be formed between universities and appropriate public agencies or private organizations.

- A consortium of organizations, the Arizona Department of Education and state agencies be formed to solicit EPA Environmental Education funds as they are available.

- Public agencies and educational institutions give cost preference, when feasible, to recycled materials and other environmentally responsible supplies and equipment.

- Public agencies and educational institutions serve as community models by actively demonstrating water and energy conservation, integrated pest management, native plant landscaping and other environmentally appropriate practices, as possible.

- Public agencies and educational institutions conduct an annual audit of their operating procedures and eliminate existing or potential environmental hazards (e.g., chemical use or storage, food, or water contaminants).

- The components of the Comprehensive Plan with its Appendices, the State Board of Education's Environmental Education Program Guidelines and the Environmental Education Handbook be presented to all university students pursuing education degrees.

- The Senate and House Environment Committees hold an annual joint hearing to review the status of environmental education in Arizona and review progress in implementation of this Comprehensive Plan.

- The Governor host an annual mini-summit on environmental education for the electronic and print media in Arizona to discuss interaction between the media and groups involved in environmental education and a synopsis of this Comprehensive Plan.

- The Governor establish a statewide annual awards program to recognize efforts in formal and non-formal Environmental Education by July 1993.

Reports due:

- Each university under jurisdiction of the Arizona Board of Regents provide plans to the Legislature on how it will implement ARS 15-1643 (1).

You can teach with your students, with your knowledge, and with your enviromnents.... On the other hand, you can take the subject of ecology and teach your students about your knowledge about your environments. In the first example you are educating environmentally. In the second case you are perpetuating the gross error which underlies our current environmental predicaments. Noel McInnis

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Summary

'If we can change our priorities, achieve balance and understanding in our roles as human beings in a complex world, the coming era can well be that of a richer civilization, not its end.' Sigurd F. Olson

This comprehensive plan for environmental education was created by the Governor's Environmental Education Task Force. This Task Force was formed in October 1990 in response to the Arizona Environmental Education Act of 1990.

A goal referenced planning model was selected as the framework on which to build the plan. There are five goals, 14 objectives and 92 recommendations contained in this plan. By implementing these recommendations, Arizonans will begin creating a unified and coordinated environmental education program in Arizona. This program will meet the intent of the Legislature in passing the Act.

To assist the user of this plan, we have listed all of the objectives and recommendations together in Section IV. In Section V, we discuss the status of environmental education, the constraints on it, the recommendations developed, and an evaluation strategy for the areas of Formal Education and Non-formal Education. The recommendations may be used more than once and are grouped under the entity or entities with responsibility for implementing them. There are two additional areas in this Section which list those recommendations applying to Funding or to Legislative/Policy Needs.

In the Formal Education area of Section V, the six entities which have been assigned responsibility are: Arizona Department of Education, Arizona State Board of Education, Arizona Board of Regents and Community College Board, County School Superintendents, Public and Private Schools/School Districts, and Universities and Community Colleges.

In the Non-formal Education area of Section V, the 10 entities which have been assigned responsibility are: Governor, Legislature, Public Agencies and Private Organizations, Regional Resource Centers, Environmental Education Advisory Council, Interagency Committee on Environmental Education, Media, Universities, Local Committees for Resource Centers, and Business and Industry.

In order to provide educators with a common set of concepts about the environment on which to build an effective environmental education program, the Task Force developed a Framework for Environmental Literacy. This Framework contains five major sections: Awareness and Appreciation; Ecological Systems and Interrelationships; Culture and Society; Resources, Resource Management and Environmental Issues; and Responsible Action. These major sections are subdivided into four or more groups under which individual concepts are listed. The Framework is appended to this plan.

Also included as appendices for the reader's reference are: The Arizona Environmental Education Act of 1990, SB 1176 amending the 1990 Act, the Tbilisi Declaration, and a synopsis of the National Environmental Education Act.

Appendices

ISSUED BY
JIM SHUMWAY
SECRETARY OF STATE

State of Arizona
House of Representatives
Thirty-ninth Legislature
Second Regular Session
1990

CHAPTER 266

HOUSE BILL 2675

AN ACT

RELATING TO EDUCATION, TRANSPORTATION AND THE ENVIRONMENT; ESTABLISHING A PROGRAM OF ENVIRONMENTAL EDUCATION; ESTABLISHING AN ENVIRONMENTAL NUMBER PLATE FUND; PRESCRIBING CERTAIN FUND PURPOSES; PROVIDING FOR ENVIRONMENTAL NUMBER PLATES AND FEES; PRESCRIBING DEFINITIONS; REQUIRING PUBLIC SCHOOLS TO INTEGRATE ENVIRONMENTAL EDUCATION INTO CURRICULUM; PRESCRIBING GUIDELINES AND AN ENVIRONMENTAL EDUCATION INFORMATION RESOURCE SYSTEM; PROVIDING FOR AN ASSESSMENT OF ENVIRONMENTAL EDUCATION PROGRAMS; PRESCRIBING THAT UNIVERSITIES ESTABLISH AN ENVIRONMENTAL EDUCATION TRAINING PROGRAM; ESTABLISHING A DEPARTMENT OF EDUCATION ENVIRONMENTAL EDUCATION FUND; PRESCRIBING CERTAIN FUND ADMINISTRATION; ESTABLISHING THE INTERAGENCY COMMITTEE ON ENVIRONMENTAL EDUCATION; PRESCRIBING APPOINTMENT, MEETINGS AND DUTIES OF THE INTERAGENCY COMMITTEE ON ENVIRONMENTAL EDUCATION; ESTABLISHING THE ARIZONA ENVIRONMENTAL EDUCATION TASK FORCE; PRESCRIBING APPOINTMENT, MEETINGS AND DUTIES OF THE ARIZONA ENVIRONMENTAL EDUCATION TASK FORCE AND THE CHAIRMAN; ESTABLISHING AN ARIZONA ENVIRONMENTAL EDUCATION TASK FORCE FUND; PRESCRIBING IMPLEMENTATION OF ENVIRONMENTAL EDUCATION PROGRAMS; AMENDING TITLE 15, CHAPTER 2, ARTICLE 1, ARIZONA REVISED STATUTES, BY ADDING SECTION 15-214; AMENDING TITLE 15, CHAPTER 7, ARTICLE 1, ARIZONA REVISED STATUTES, BY ADDING SECTION 15-706; AMENDING TITLE 15, CHAPTER 10, ARIZONA REVISED STATUTES, BY ADDING ARTICLE 7.1; AMENDING TITLE 15, CHAPTER 13, ARTICLE 2, ARIZONA REVISED STATUTES, BY ADDING SECTION 15-1643; AMENDING TITLE 28, CHAPTER 3, ARTICLE 1, ARIZONA REVISED STATUTES, BY ADDING SECTION 28-308.08; AMENDING TITLE 49, CHAPTER 1, ARIZONA REVISED STATUTES, BY ADDING ARTICLE 4; AMENDING SECTION 28-301.03, ARIZONA REVISED STATUTES, AND PROVIDING FOR A CERTAIN DELAYED REPEAL DATE.

Be it enacted by the Legislature of the State of Arizona:

Section 1. Legislative intent

The legislature recognizes that the education of the people in this state is critical to maintaining the delicate balance among all forms of life and their environments. It is the intent of the legislature that the public schools, community colleges, state universities and state agencies provide a continuing awareness of the essential mission to preserve the

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earth's capacity to sustain a quality of life in the most healthful, enjoyable and productive environment possible. It is the further intent of the legislature that the public schools, community colleges, state universities and state agencies integrate environmental education throughout the educational system and public education programs so that awareness of students and the general public is thorough, continuous and meaningful.

Sec. 2. Title 15, chapter 2, article 1, Arizona Revised Statutes, is amended by adding section 15-214, to read:

15-214. Environmental number plate fund; purpose

A. AN ENVIRONMENTAL NUMBER PLATE FUND IS ESTABLISHED IN THE DEPARTMENT OF EDUCATION CONSISTING OF MONIES RECEIVED BY THE DEPARTMENT PURSUANT TO SECTION 28-308.08.

B. THE DEPARTMENT SHALL DEVELOP A PLAN FOR THE EXPENDITURE OF MONIES IN THE FUND. ALL MONIES IN THE FUND SHALL ONLY BE USED FOR ENVIRONMENTAL EDUCATION.

C. THE FUND ESTABLISHED IN THIS SECTION IS EXEMPT FROM THE PROVISIONS OF SECTION 35-190, RELATING TO LAPSING OF APPROPRIATIONS. ON NOTICE FROM THE DEPARTMENT OF EDUCATION, THE STATE TREASURER SHALL INVEST AND DIVEST MONIES IN THE FUND AS PROVIDED BY SECTION 35-313. THE STATE TREASURER SHALL CREDIT ALL MONIES EARNED FROM THESE INVESTMENTS TO THE FUND.

Sec. 3. Title 15, chapter 7, article 1, Arizona Revised Statutes, is amended by adding section 15-706, to read:

15-706. Instruction in environmental education; assessment; definition

A. ALL SCHOOL DISTRICTS SHALL DEVELOP AND IMPLEMENT PROGRAMS WHICH INTEGRATE ENVIRONMENTAL EDUCATION INTO THE GENERAL CURRICULUM. THE PROGRAMS SHALL BE DESIGNED TO HELP PUPILS DEVELOP AN UNDERSTANDING OF THE IMPORTANCE OF THE ENVIRONMENT. THE ENVIRONMENTAL EDUCATION PROGRAM SHALL INCLUDE CURRICULA TO INCREASE AWARENESS OF THE ENVIRONMENT AND TO PROMOTE KNOWLEDGE OF ENVIRONMENTAL CONCEPTS, DEVELOP POSITIVE ATTITUDES AND VALUES TOWARD THE ENVIRONMENT AND ENCOURAGE CIVIC AND SOCIAL RESPONSIBILITY TOWARD ENVIRONMENTAL ISSUES. THE ENVIRONMENTAL EDUCATION PROGRAM OF EACH SCHOOL DISTRICT SHALL BE ASSESSED AS TO THE EXTENT TO WHICH PUPILS HAVE DEVELOPED AN UNDERSTANDING OF THE IMPORTANCE OF THE ENVIRONMENT TO THE FUTURE OF THIS STATE AND ITS CITIZENS.

B. THE STATE BOARD OF EDUCATION SHALL PRESCRIBE GUIDELINES FOR DISTRICTS TO FOLLOW IN DEVELOPING THEIR ENVIRONMENTAL EDUCATION PROGRAMS AND ASSESSMENTS FOR USE IN EVALUATING THE IMPLEMENTATION OF THE PROGRAMS.

C. THE DEPARTMENT OF EDUCATION SHALL ESTABLISH AND MAINTAIN AN ENVIRONMENTAL EDUCATION INFORMATION RESOURCE SYSTEM. THE SYSTEM SHALL INCLUDE A CURRENT DOCUMENTATION, REFERRAL AND DISSEMINATION PROGRAM FOR ENVIRONMENTAL EDUCATION MATERIALS AND INFORMATION.

D. THE DEPARTMENT OF EDUCATION SHALL COLLABORATE WITH THE UNIVERSITIES AND OTHER RECOGNIZED ENVIRONMENTAL EDUCATION PROGRAMS IN PROVIDING ENVIRONMENTAL EDUCATION TRAINING PROGRAMS FOR CERTIFICATED TEACHERS AS PRESCRIBED IN SECTION 15-1643.

E. THE DEPARTMENT OF EDUCATION, IN CONSULTATION WITH THE ARIZONA BOARD OF REGENTS, SHALL DEVELOP A LIST OF SKILLS IN ENVIRONMENTAL EDUCATION TO BE INCLUDED IN TEACHER TRAINING PROGRAMS.

F. IN THIS SECTION "ENVIRONMENTAL EDUCATION" MEANS THE EDUCATIONAL PROCESS DEALING WITH THE RELATIONSHIP OF HUMANS TO THEIR NATURAL AND ARTIFICIAL SURROUNDINGS AND INCLUDES THE RELATION OF POPULATION, POLLUTION, RESOURCE ALLOCATION, RESOURCE DEPLETION, CONSERVATION, TRANSPORTATION, TECHNOLOGY AND URBAN AND RURAL PLANNING TO THE ENVIRONMENT.

Sec. 4. Title 15, chapter 10, Arizona Revised Statutes, is amended by adding article 7.1, to read:

ARTICLE 7.1. DEPARTMENT OF EDUCATION ENVIRONMENTAL EDUCATION FUND

15-1211. Department of education environmental education fund

A. A DEPARTMENT OF EDUCATION ENVIRONMENTAL EDUCATION FUND IS ESTABLISHED FOR THE PURPOSE OF PROVIDING MONIES TO THE DEPARTMENT OF EDUCATION FOR PERSONNEL AND OTHER EXPENDITURES NECESSARY TO ASSIST SCHOOL DISTRICTS IN IMPLEMENTING ENVIRONMENTAL EDUCATION PROGRAMS AND TO PROVIDE TRAINING AS PRESCRIBED IN SECTION 15-706.

B. THE SUPERINTENDENT OF PUBLIC INSTRUCTION SHALL ADMINISTER THE FUND.

C. MONIES FOR THE FUND MAY BE PROVIDED FROM LEGISLATIVE APPROPRIATIONS AND BY DONATIONS FROM INTERESTED INDIVIDUALS AND ORGANIZATIONS.

D. THE FUND ESTABLISHED BY THIS SECTION IS EXEMPT FROM THE PROVISIONS OF SECTION 35-190, RELATING TO LAPSING OF APPROPRIATIONS.

Sec. 5. Title 15, chapter 13, article 2, Arizona Revised Statutes, is amended by adding section 15-1643, to read:

15-1643. Environmental education training programs

EACH OF THE UNIVERSITIES UNDER THE JURISDICTION OF THE ARIZONA BOARD OF REGENTS SHALL PROVIDE TRAINING IN THE ENVIRONMENTAL EDUCATION SKILLS PRESCRIBED IN SECTION 15-706, AS FOLLOWS:

1. INCORPORATE TRAINING IN ENVIRONMENTAL EDUCATION INTO ITS TEACHER TRAINING PROGRAMS. THE TRAINING IS ENCOURAGED TO BE PROVIDED THROUGH EXISTING UNIVERSITY COURSES OR THROUGH NEW COURSES ON ECOLOGICAL CONCEPTS AND METHODS OF TEACHING AND SHALL INCLUDE TEACHING METHODS TO INCREASE AWARENESS OF ENVIRONMENTAL ISSUES AND TO PROMOTE KNOWLEDGE OF ENVIRONMENTAL CONCEPTS, DEVELOP POSITIVE ATTITUDES AND VALUES TOWARD THE ENVIRONMENT AND ENCOURAGE CIVIC AND SOCIAL RESPONSIBILITY TOWARD ENVIRONMENTAL ISSUES.

2. IN COLLABORATION WITH THE DEPARTMENT OF EDUCATION AND OTHER RECOGNIZED ENVIRONMENTAL EDUCATION PROGRAMS, PROVIDE ENVIRONMENTAL EDUCATION TRAINING PROGRAMS FOR CERTIFICATED TEACHERS. THE PROGRAMS SHALL INCLUDE THE TOPICS PRESCRIBED IN PARAGRAPH 1 AND MAY INCLUDE:

(a) WORKSHOPS ON ENVIRONMENTAL EDUCATION PROVIDED AT THE UNIVERSITIES, IN SCHOOL DISTRICTS OR AT CONFERENCES.

(b) SPECIAL INSTITUTES ON ENVIRONMENTAL EDUCATION FOR TEACHERS WHO, AFTER RECEIVING INSTRUCTION IN ENVIRONMENTAL EDUCATION, ARE ENCOURAGED TO

RETURN TO THEIR INDIVIDUAL SCHOOL DISTRICTS AND PROVIDE ENVIRONMENTAL EDUCATION INSTRUCTION TO OTHER TEACHERS IN THE SCHOOL DISTRICT.

Sec. 6. Section 28-301.03, Arizona Revised Statutes, is amended to read:

28-301.03. Director as registering officer; special fund; reversion

A. The department is entitled to establish a special fund composed of the monies retained pursuant to section 28-1591, subsection F and one dollar of each registration fee, one dollar of each title fee and two dollars of each late registration penalty collected by the director as the registering officer, the air quality compliance fee collected pursuant to section 49-542, FROM AND AFTER SEPTEMBER 30, 1992 AN EIGHT DOLLAR ENVIRONMENTAL NUMBER PLATE ANNUAL ADMINISTRATION FEE COLLECTED UNDER SECTION 28-308.08 and an eight dollar collegiate plate annual administration fee collected under section 28-308.01. The department may use the monies to carry out the duties imposed by this title for registration or titling of vehicles, to cover the administrative costs of issuing the air quality compliance sticker or modifying the year validating tab and to cover expenses and costs in issuing the collegiate number plates provided by section 28-308.01 AND FROM AND AFTER SEPTEMBER 30, 1992 THE ENVIRONMENTAL NUMBER PLATES PROVIDED BY SECTION 28-308.08.

B. The special fund established in this section is exempt from section 35-190 relating to lapsing of appropriations. Any amounts in excess of one hundred thousand dollars for each county which enters into a contract pursuant to section 28-301.02 remaining in the fund at the close of each fiscal year revert to the state highway fund.

C. The state treasurer may invest inactive monies in the special fund. The state treasurer shall credit all interest earned on the special fund monies to the special fund.

Sec. 7. Title 28, chapter 3, article 1, Arizona Revised Statutes, is amended by adding section 28-308.08, to read:

28-308.08. Environmental number plates; fee; fund

A. A PERSON WHO IS THE REGISTERED OWNER OF A VEHICLE REGISTERED WITH THE MOTOR VEHICLE DIVISION OR WHO MAKES APPLICATION FOR AN ORIGINAL OR RENEWAL REGISTRATION OF A VEHICLE, ON PAYMENT OF THE REGISTRATION FEE PRESCRIBED IN SECTION 28-205, MAY APPLY TO THE MOTOR VEHICLE DIVISION FOR AN ENVIRONMENTAL NUMBER PLATE, WHICH SHALL BE AFFIXED TO THE VEHICLE FOR WHICH REGISTRATION IS SOUGHT IN LIEU OF THE REGULAR NUMBER PLATE.

B. THE ENVIRONMENTAL NUMBER PLATE DESIGN SHALL BE SELECTED BY THE GOVERNOR FROM AMONG THE ENTRIES RECEIVED IN AN OPEN COMPETITION SPONSORED BY THE GOVERNOR'S OFFICE.

C. A PERSON WHO REQUESTS AN ENVIRONMENTAL NUMBER PLATE SHALL PAY THE ENVIRONMENTAL PLATE ANNUAL ADMINISTRATION FEE AS PROVIDED BY SECTION 28-301.03 AND AN ADDITIONAL SEVENTEEN DOLLAR ENVIRONMENTAL PLATE ANNUAL DONATION. THE DIRECTOR SHALL TRANSMIT ALL ENVIRONMENTAL PLATE ANNUAL DONATIONS TO THE STATE TREASURER. THE STATE TREASURER SHALL TRANSMIT THE MONIES FROM THE ENVIRONMENTAL PLATE ANNUAL DONATION TO THE DEPARTMENT OF EDUCATION FOR DISBURSEMENT TO ENVIRONMENTAL EDUCATION PROGRAMS.

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D. AN ENVIRONMENTAL NUMBER PLATE SHALL BE ISSUED ONLY TO THE REGISTERED OWNER OF THE VEHICLE ON WHICH IT IS TO BE DISPLAYED.

E. IF A PERSON WHO HAS BEEN ISSUED AN ENVIRONMENTAL NUMBER PLATE APPLIES TO THE MOTOR VEHICLE DIVISION FOR TRANSFER OF THE PLATE TO A SUBSEQUENTLY ACQUIRED VEHICLE, THE MOTOR VEHICLE DIVISION SHALL CHARGE A TRANSFER FEE OF TWELVE DOLLARS IN ADDITION TO ALL OTHER APPROPRIATE FEES.

F. IF A PERSON WHO HAS BEEN ISSUED AN ENVIRONMENTAL NUMBER PLATE SELLS, TRADES OR OTHERWISE RELEASES OWNERSHIP OF THE VEHICLE ON WHICH THE PLATE HAS BEEN DISPLAYED, HE SHALL IMMEDIATELY REPORT THE TRANSFER OF THE PLATE TO THE MOTOR VEHICLE DIVISION OR HE SHALL SURRENDER THE PLATE TO THE MOTOR VEHICLE DIVISION.

G. IF THE LESSEE OF A VEHICLE FOR WHICH AN ENVIRONMENTAL NUMBER PLATE HAS BEEN ISSUED SUBSEQUENTLY PURCHASES THE SAME VEHICLE, THE MOTOR VEHICLE DIVISION, ON REQUEST OF THE NEW OWNER, SHALL ISSUE THE ENVIRONMENTAL NUMBER PLATE TO THE NEW OWNER OF THE VEHICLE. THE NEW OWNER SHALL PAY A FEE OF TWELVE DOLLARS IN ADDITION TO ALL OTHER APPROPRIATE FEES BUT IS NOT REQUIRED TO PAY THE ADMINISTRATION FEE OR ANY ANNUAL DONATION UNTIL THE EXPIRATION OF THE FULL YEAR FOR WHICH THE FEE AND DONATION WERE PAID.

Sec. 8. Title 49, chapter 1, Arizona Revised Statutes, is amended by adding article 4, to read:

ARTICLE 4. INTERAGENCY COMMITTEE ON ENVIRONMENTAL EDUCATION

49-161. Interagency committee on environmental education; appointment; meetings; duties

A. THE INTERAGENCY COMMITTEE ON ENVIRONMENTAL EDUCATION IS ESTABLISHED CONSISTING OF SIXTEEN MEMBERS. THE HEAD OF EACH AGENCY LISTED IN SUBSECTION B OF THIS SECTION SHALL APPOINT ONE EMPLOYEE OF THAT AGENCY TO SERVE ON THE INTERAGENCY COMMITTEE ON ENVIRONMENTAL EDUCATION. THE MEMBERS SERVE AT THE PLEASURE OF THE HEAD OF EACH AGENCY LISTED IN SUBSECTION B OF THIS SECTION.

B. THE COMMITTEE SHALL BE COMPOSED OF PERSONS WITH EXPERIENCE IN ENVIRONMENTAL EDUCATION AND THE MEMBERS SHALL CONSIST OF:

1. AN EMPLOYEE IN AN ADMINISTRATIVE OR MANAGERIAL CAPACITY WITH THE DEPARTMENT OF TRANSPORTATION.
2. AN EMPLOYEE IN AN ADMINISTRATIVE OR MANAGERIAL CAPACITY WITH THE DEPARTMENT OF WATER RESOURCES.
3. AN EMPLOYEE IN AN ADMINISTRATIVE OR MANAGERIAL CAPACITY WITH THE DEPARTMENT OF ENVIRONMENTAL QUALITY.
4. AN EMPLOYEE IN AN ADMINISTRATIVE OR MANAGERIAL CAPACITY WITH THE STATE LAND DEPARTMENT.
5. AN EMPLOYEE IN AN ADMINISTRATIVE OR MANAGERIAL CAPACITY WITH THE STATE PARKS.
6. AN EMPLOYEE IN AN ADMINISTRATIVE OR MANAGERIAL CAPACITY WITH THE OFFICE OF TOURISM.
7. AN EMPLOYEE IN AN ADMINISTRATIVE OR MANAGERIAL CAPACITY WITH THE DEPARTMENT OF EDUCATION.
8. AN EMPLOYEE IN AN ADMINISTRATIVE OR MANAGERIAL CAPACITY WITH THE COMMISSION ON THE ARIZONA ENVIRONMENT.

9. AN EMPLOYEE IN AN ADMINISTRATIVE OR MANAGERIAL CAPACITY WITH THE ARIZONA GEOLOGICAL SURVEY.

10. AN EMPLOYEE IN AN ADMINISTRATIVE OR MANAGERIAL CAPACITY WITH THE ENERGY OFFICE.

11. AN EMPLOYEE IN AN ADMINISTRATIVE OR MANAGERIAL CAPACITY WITH THE SOLAR ENERGY ADVISORY COUNCIL.

12. AN EMPLOYEE IN AN ADMINISTRATIVE OR MANAGERIAL CAPACITY WITH THE ARIZONA GAME AND FISH DEPARTMENT.

13. AN EMPLOYEE IN AN ADMINISTRATIVE OR MANAGERIAL CAPACITY WITH THE DEPARTMENT OF AGRICULTURE.

14. AN EMPLOYEE IN AN ADMINISTRATIVE OR MANAGERIAL CAPACITY WITH THE STATE MINE INSPECTOR.

15. AN EMPLOYEE IN AN ADMINISTRATIVE OR MANAGERIAL CAPACITY WITH THE DEPARTMENT OF HEALTH SERVICES.

16. AN EMPLOYEE IN AN ADMINISTRATIVE OR MANAGERIAL CAPACITY WITH THE OFFICE OF THE ATTORNEY GENERAL.

C. THE GOVERNOR SHALL APPOINT THE CHAIRPERSON OF THE COMMITTEE.

D. THE COMMITTEE SHALL MEET AT LEAST FOUR TIMES A YEAR.

E. MEMBERS OF THE COMMITTEE ARE NOT ELIGIBLE TO RECEIVE COMPENSATION AND ARE NOT ELIGIBLE FOR REIMBURSEMENT OF EXPENSES FROM THE COMMITTEE.

F. THE COMMITTEE SHALL:

1. ENCOURAGE THE COORDINATION OF INTERAGENCY ACTIVITIES REGARDING ENVIRONMENTAL EDUCATION TO PROMOTE THE EFFICIENT DISTRIBUTION OF INFORMATION AND TO FACILITATE THE PLANNING AND DEVELOPMENT OF EDUCATIONAL MATERIALS.

2. DEVELOP AND MAINTAIN A MEMORANDUM OF UNDERSTANDING TO SPECIFY METHODS BY WHICH THE AGENCIES CAN SHARE THEIR RESOURCES TO BENEFIT ENVIRONMENTAL EDUCATION IN THIS STATE.

3. RECOMMEND ACTION BY AGENCIES REGARDING THE IMPROVEMENT OF ENVIRONMENTAL EDUCATION PROGRAMS AND THE IMPLEMENTATION OF THE MEMORANDUM OF UNDERSTANDING.

4. ASSESS EACH AGENCY'S CAPABILITY TO MANDATE ENVIRONMENTAL EDUCATION PROGRAMS.

5. ASSESS EACH AGENCY'S CURRENT ENVIRONMENTAL EDUCATION PUBLIC AWARENESS PROGRAMS.

6. ASSIST IN THE INTEGRATION OF STATEWIDE ENVIRONMENTAL EDUCATION.

7. PROVIDE A LINK BETWEEN THIS STATE AND FEDERAL AND LOCAL AGENCIES AND DEPARTMENTS RELATING TO ENVIRONMENTAL EDUCATION.

8. KEEP A WRITTEN RECORD OF THE PROCEEDINGS OF EACH MEETING. THESE RECORDS SHALL BE KEPT ON FILE BY AN AGENCY SELECTED BY THE COMMITTEE.

Sec. 9. Arizona environmental education task force; appointment; meetings, duties.

A. The Arizona environmental education task force is established consisting of thirty-one members appointed by the governor.

B. The members shall each have experience in environmental issues and shall consist of:

1. One employee in an administrative or managerial capacity of the department of education.

2. One employee in an administrative or managerial capacity of one of the universities under the jurisdiction of the Arizona board of regents.

3. One employee in an administrative or managerial capacity of a community college under the jurisdiction of the state board of directors for community colleges.

4. Two teachers from public schools of this state, one teacher from grades one through eight and one teacher from grades nine through twelve.

5. One member of the commission on the Arizona environment.

6. Four members from recognized private organizations which promote conservation of the environment.

7. Two members from the private business sector.

8. One member from a health organization.

9. One teacher from a private school located in this state.

10. One employee of a federal natural resource agency.

11. One member of the interagency committee on environmental education.

12. Four members of the general public each of whom must reside in a different region of this state.

13. One Native American who resides on a reservation in this state.

14. One member of the governor's staff.

15. One member of the communications media.

16. Two members of the house of representatives, one of whom shall be a republican and one of whom shall be a democrat.

17. Two members of the senate, one of whom shall be a republican and one of whom shall be a democrat.

18. One employee in an administrative or managerial capacity with the department of environmental quality.

19. One employee in an administrative or managerial capacity with the Arizona geological survey.

20. One employee in an administrative or managerial capacity with the department of health services.

21. One employee in an administrative or managerial capacity with the game and fish department.

C. The task force shall:

1. Select a chairperson and vice-chairpersons. The chairperson shall organize the task force into subgroups to effectively carry out the mandates of the task force.

2. Prepare a status report providing a current assessment of environmental education activities within this state for submission to the governor by December 1, 1990. The report shall include findings and recommendations necessary to establish a unified and coordinated environmental education program within this state and may include draft legislation or rules necessary to implement the recommendations.

3. Issue a comprehensive plan for environmental education in this state to the governor by June 1, 1991.

4. Advise the governor, the legislature and the agencies of this state on policies and practices needed to provide environmental education to visitors and residents who have little or no contact with the public education system of this state.

5. Recommend a priority list for the types of programs to be funded through the environmental education trust fund.

6. Establish programs to promote public awareness of environmental issues by recommending the production of media programs relating to environmental issues with the assistance of state agencies.

7. Provide assistance to and obtain information from the interagency committee on environmental education to coordinate the environmental education programs of the state agencies.

8. Develop a mechanism for spending monies appropriated and donated for environmental education.

9. Recommend legislation to disburse monies held in the environmental number plate fund pursuant to section 15-214, Arizona Revised Statutes.

10. Conduct a feasibility study of implementing regional resource centers that best meet the environmental education needs of this state and are consistent with the policy and philosophy of this act and make recommendations to the universities regarding this implementation.

11. Submit recommendations regarding environmental education issues to the department of education and encourage the department of education to implement such recommendations.

D. The task force may:

1. Evaluate the environmental education programs for visitors and residents who do not regularly receive services from the public education system of this state and, as appropriate, prepare studies and recommendations to improve the effect of those programs on public support for environmental protection.

2. Examine proposed and existing programs that affect the environment and recommend statewide policies that will direct a unified, coordinated effort to educate the public about the programs.

3. Encourage and, when appropriate, coordinate studies relating to the environment and environmental education conducted by the universities and by state, local and federal agencies.

E. The task force may use the resources and staff of the governor's office, the Arizona commission on the environment, the university system, state agencies and the legislature to accomplish its goals and duties.

Sec. 10. Arizona environmental education task force fund

A. An Arizona environmental education task force fund is established in the Arizona environmental education task force consisting of monies received from private individuals and organizations.

B. The task force shall develop a plan for the expenditure of monies in the fund. All monies in the fund shall only be used to carry out the duties of the task force.

C. The fund established in this section is exempt from the provisions of section 35-190, Arizona Revised Statutes, relating to

lapsing of appropriations. Any monies remaining in the fund after June 30, 1991 revert to the environmental education fund established pursuant to section 15-1211, Arizona Revised Statutes, as added by this act.

Sec. 11. Delayed repeal

Sections 9 and 10 of this act are repealed from and after June 30, 1991.

Sec. 12. Implementation of environmental education programs

A. Notwithstanding section 15-706, Arizona Revised Statutes, as added by this act:

1. School districts shall implement environmental education programs in the academic year following the fiscal year in which the environmental education information resource system is established as provided in paragraph 3 of this subsection.

2. The state board of education is required to develop guidelines for environmental programs by June 30, 1991 and assessments of environmental education programs by September 1, 1992.

3. The department of education is required to establish and maintain an environmental education information resource system during the fiscal year in which the department of education environmental education fund contains at least one hundred thousand dollars.

B. Notwithstanding section 15-1643, Arizona Revised Statutes, as added by this act, a university under the jurisdiction of the Arizona board of regents is not required to incorporate training in environmental education into its teacher training programs, provide environmental education training programs to certificated teachers or establish an environmental resource center until fiscal year 1991-1992.

C. The department of education, in consultation with the Arizona board of regents, shall submit a report on the implementation and assessment of environmental education programs and the training of certificated teachers in environmental education to the president of the senate, the speaker of the house of representatives and the governor by November 15, 1993.

Sec. 13. Delayed effective date

Sections 15-214 and 28-308.08, Arizona Revised Statutes, as added by this act, are effective from and after September 30, 1992.

Approved by the Governor June 6, 1990

Filed in the Office of Secretary of State June 6, 1990

State of Arizona
Senate
Fortieth Legislature
First Regular Session
1991

FILED
ARIZONA
SECRETARY OF STATE

CHAPTER 232

SENATE BILL 1176

AN ACT

AMENDING LAWS 1990, CHAPTER 266, SECTIONS 9, 10, 11 AND 12; RELATING TO ENVIRONMENTAL EDUCATION.

Be it enacted by the Legislature of the State of Arizona:

Section 1. Laws 1990, chapter 266, section 9 is amended to read:

Sec. 9. Arizona environmental education task force; appointment; meetings, duties

A. The Arizona environmental education task force is established consisting of thirty-one members appointed by the governor.

B. The members shall each have experience in environmental issues and shall consist of:

1. One employee in an administrative or managerial capacity of the department of education.

2. One employee in an administrative or managerial capacity of one of the universities under the jurisdiction of the Arizona board of regents.

3. One employee in an administrative or managerial capacity of a community college under the jurisdiction of the state board of directors for community colleges.

4. Two teachers from public schools of this state, one teacher from grades one through eight and one teacher from grades nine through twelve.

5. One member of the commission on the Arizona environment.

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9. One teacher from a private school located in this state.

10. One employee of a federal natural resource agency.

11. One member of the interagency committee on environmental education.

12. Four members of the general public each of whom must reside in a different region of this state.

13. One Native American who resides on a reservation in this state.

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14. One member of the governor's staff.
15. One member of the communications media.
16. Two members of the house of representatives, one of whom shall be a republican and one of whom shall be a democrat.
17. Two members of the senate, one of whom shall be a republican and one of whom shall be a democrat.
18. One employee in an administrative or managerial capacity with the department of environmental quality.
19. One employee in an administrative or managerial capacity with the Arizona geological survey.
20. One employee in an administrative or managerial capacity with the department of health services.
21. One employee in an administrative or managerial capacity with the game and fish department.

C. The task force shall:

1. Select a chairperson and vice-chairpersons. The chairperson shall organize the task force into subgroups to effectively carry out the mandates of the task force.

2. Prepare a status report providing a current assessment of environmental education activities within this state for submission to the governor by ~~December 1, 1990~~ APRIL 22, 1991. The report shall include findings and recommendations necessary to establish a unified and coordinated environmental education program within this state and may include draft legislation or rules necessary to implement the recommendations.

3. Issue a comprehensive plan for environmental education in this state to the governor by ~~June 1~~ DECEMBER 15, 1991.

4. Advise the governor, the legislature and the agencies of this state on policies and practices needed to provide environmental education to visitors and residents who have little or no contact with the public education system of this state.

5. Recommend a priority list for the types of programs to be funded through the environmental education trust fund.

6. Establish programs to promote public awareness of environmental issues by recommending the production of media programs relating to environmental issues with the assistance of state agencies.

7. Provide assistance to and obtain information from the interagency committee on environmental education to coordinate the environmental education programs of the state agencies.

8. Develop a mechanism for spending monies appropriated and donated for environmental education.

9. Recommend legislation to disburse monies held in the environmental number plate fund pursuant to section 15-214, Arizona Revised Statutes.

10. Conduct a feasibility study of implementing regional resource centers that best meet the environmental education needs of this state and are consistent with the policy and philosophy of this act and make recommendations to the universities regarding this implementation.

11. Submit recommendations regarding environmental education issues to the department of education and encourage the department of education to implement such recommendations.

D. The task force may:

1. Evaluate the environmental education programs for visitors and residents who do not regularly receive services from the public education system of this state and, as appropriate, prepare studies and recommendations to improve the effect of those programs on public support for environmental protection.

2. Examine proposed and existing programs that affect the environment and recommend statewide policies that will direct a unified, coordinated effort to educate the public about the programs.

3. Encourage and, when appropriate, coordinate studies relating to the environment and environmental education conducted by the universities and by state, local and federal agencies.

E. The task force may use the resources and staff of the governor's office, the Arizona commission on the environment, the university system, state agencies and the legislature to accomplish its goals and duties.

Sec. 2. Laws 1990, chapter 266, section 10, is amended to read:

Sec. 10. Arizona environmental education task force fund

A. An Arizona environmental education task force fund is established in the Arizona environmental education task force consisting of monies received from private individuals and organizations.

B. The task force shall develop a plan for the expenditure of monies in the fund. All monies in the fund shall only be used to carry out the duties of the task force.

C. The fund established in this section is exempt from the provisions of section 35-190, Arizona Revised Statutes, relating to lapsing of appropriations. Any monies remaining in the fund after June 30, ~~1991~~ 1992 revert to the environmental education fund established pursuant to section 15-1211, Arizona Revised Statutes, as added by this act.

Sec. 3. Laws 1990, chapter 266, section 11, is amended to read:

Sec. 11. Delayed repeal

Sections 9 and 10 of this act are repealed from and after June 30, ~~1991~~ 1992.

Sec. 4. Laws 1990, chapter 266, section 12, is amended to read:

Sec. 12. Implementation of environmental education programs

A. Notwithstanding section 15-706, Arizona Revised Statutes, as added by this act:

1. School districts shall implement environmental education programs in the academic year following the fiscal year in which the environmental education information resource system is established as provided in paragraph 3 of this subsection.

2. The state board of education is required to develop guidelines for environmental programs by June 30, ~~1991~~ 1992 and assessments of environmental education programs by September 1, ~~1992~~ 1993.

3. The department of education is required to establish and maintain an environmental education information resource system during the fiscal year in which the department of education environmental education fund contains at least one hundred thousand dollars.

B. Notwithstanding section 15-1643, Arizona Revised Statutes, as added by this act, a university under the jurisdiction of the Arizona board of regents is not required to incorporate training in environmental education into its teacher training programs, provide environmental education training programs to certificated teachers or establish an environmental resource center until fiscal year 1991-1992.

C. The department of education, in consultation with the Arizona board of regents, shall submit a report on the implementation and assessment of environmental education programs and the training of certificated teachers in environmental education to the president of the senate, the speaker of the house of representatives and the governor by November 15, 1993.

Sec. 5. Emergency

This act is an emergency measure that is necessary to preserve the public peace, health or safety and is operative immediately as provided by law.

Approved by the Governor June 12, 1991

Filed in the Office of the Secretary of State June 12, 1991

Framework for Environmental Literacy

State of Arizona
Environmental Education Task Force
1991

Statement of Purpose

The purpose of the Framework for Environmental Literacy is to advance the development of an environmentally literate and conscientious citizenry. This document is intended to serve educators who work with children and adults in formal and non-formal contexts, through public agencies and private organizations as well as schools and universities. The Framework provides an outline of the background needed to understand complex environmental issues; place those issues in the realistic social, economic and ecological context; and work toward solving or preventing environmental problems. To understand the content of the Framework is to understand what humans must know in order to live compatibly with the environment.

Use of the Framework

Most users are likely to incorporate only a subset of these concepts in their own environmental education programs. Users are encouraged to select subsections of the document, or items from throughout, that provide a meaningful theme for their program or an extension of it. Through such application of the Framework, it becomes possible for diverse programs across Arizona to complement and reinforce each other. Over time, children and adults will be exposed to key concepts through a variety of activities and settings, and will thus achieve an integrated understanding of our environment and our relationship to it.

The Framework as a whole outlines a strategic sequence from awareness to understanding to action. A slight amount of overlap between sections has been allowed in order to provide cohesiveness and completeness within each section. The content is arranged to provide a natural progress of ideas and all items should be considered equally important regardless of their place in the sequence.

This Framework for Environmental Literacy is broad and is intended to be that way. Each item is a foundational concept and starting point for further inquiry.[1]

Overview

The environment sustains all life, including human life. The environment is a dynamic, constantly changing complex of interacting forces which influence every facet of human existence and well-being. Throughout history, humans have expressed awareness and appreciation of nature in the arts and religion. Today, science reveals that humans are an interdependent part of the natural world. The effects of the environment on human life are dynamic, as are the effects of humans on the environment.

An ecosystem encompasses all of the interacting biotic and abiotic components of a given area. An ecosystem, by its very nature, tends to be in constant flux, as change in one ecosystem component affects other components. A biotic community includes many interdependent species, each with its own survival needs and role in its ecosystem. Natural systems have intrinsic worth.

Humans are a part of many ecosystems, and ecosystems are the context for all human activity. Beyond Earth's ecosystems, no suitable human habitat is known to exist. Scientific evidence indicates that it is to human advantage to work in concert with natural systems rather than attempt to ignore them.

All peoples, past and present, have been influenced by their natural surroundings. Environmental factors may influence many aspects of a society, including its art, religion and economy. Conversely, attitudes toward nature are influenced by many factors and vary both within and between cultures. Communities throughout Arizona are interrelated, as are diverse nations across the globe, through mutual dependence on resources and environment.

Natural resources by definition are beneficial to humanity; natural resources sustain human life. The global human population, which is increasing at an exponential rate, is totally dependent on a continual supply of natural resources. The global resource base is finite and therefore conservation of natural resources is critical. A given resource may have many values or uses. Effective resource management decisions and environmental policies are predicated on a sound scientific understanding of ecosystems and a long term perspective on society as a whole.

Human "quality of life," however it may be defined, is linked to environmental quality. Human decisions and actions can impact environmental quality and quality of life both positively and negatively. Change in societies and environments is the norm, and individual and collective choice play an important role in determining the direction of change. In any group or any nation, a spirit of humanity and good citizenship involve educating oneself about environmental concerns and working toward positive partnerships and responsible action.

Awareness and Appreciation

ENVIRONMENT AWARENESS

- All living things depend on the Earth and Sun as the source of the basic requirements of life and thus their very existence.
- An environment is the complex of physical, chemical and biological factors affecting an individual, population or community.
- All living things are a product of their environment and an integral part of it, constantly interacting with it, affecting it and being affected by it.
- The natural environment normally functions according to complex patterns of relationships between living and nonliving things.
- Interacting environmental systems on Earth include geological, hydrological, atmospheric and biological systems.
- Continuous change is a normal condition of environments and living things.

HUMANS AND ENVIRONMENT

- Humans are a part of nature, not separate from it.
- The same factors influencing other living things also influence humans.
- Environments affect all aspects of human life, including the physical, biological, social and cultural.
- The survival of the human species depends on our environment and our interactions with it.
- Humans are unique among all species in their increasing ability to intentionally and unintentionally cause extreme positive or negative change in the global environment.
- As human population and environmental problems increase, it is of increasing concern that humans recognize their responsibility to future generations.

AESTHETIC APPRECIATION AND EXPRESSION

- The life-styles, art and religion of a people may be indicators of their perception of and relationship with their environment.
- Appreciation of nature is an impetus for many forms of creative expression, including music, art, crafts, photography, drama, dance and literature.
- In some cultures, human interplay with the natural world is a major influence on the customs of that society and the daily life of its individual members.
- In some cultures, the relationship between humans and nature is central to the human religious experience and finds expression through spiritual teachings and writings, myths, acts, symbols and ceremonies.
- The natural world has intrinsic worth.
- Individuals and cultures vary in the degree to which they value nature for its own sake and for its ability to serve human needs.

PERSONAL WELL-BEING

- Our natural and built environments are the basis for our physical and personal well being.
- Opportunities to engage in active or passive outdoor recreation can contribute to human physical, mental and emotional health.
- Opportunities to experience solitude in nature, and to experience diverse facets of nature, can contribute to human physical, mental and emotional health.
- A sense of place, or a sense of feeling at home and connected with a specific environment, contributes to personal well-being and appreciation of other environments.
- Humans may find peace and satisfaction through study and observation of nature, and simply through awareness of its existence.
- Respect for the land and all living things can encourage people to help maintain a healthy environment, providing benefits for themselves and others.

Ecological Systems and Interrelationships

ENERGY AND OTHER PHYSICAL FACTORS

- A constant influx of energy is required for organisms and ecosystems to sustain themselves.
- The sun is the ultimate source of energy upon which virtually all life forms depend.
- Energy can be neither created nor destroyed, only transformed from one form to another.
- Every time energy is transformed, it becomes less available to do useful work.
- Photosynthetic activities of green plants capture energy from the sun and make the sun's energy accessible to other living things.
- Biological processes occurring within and between organisms involve the conversion, utilization, storage and transfer of energy and nutrients.
- The absorption and distribution of solar energy drives many physical processes, including global atmospheric circulation, the hydrologic cycle, ocean currents, and local climate and weather patterns.
- Many diverse physical factors, including solar radiation, water , climate, geology, topography and soils, interact to influence the growth, reproduction and distribution of plants and animals.
- Such physical factors as solar radiation, water, climate, geology, topography and soils exert major influences on human land use patterns.
- All earth systems operate according to the laws of physics and chemistry.
- The biosphere is the thin sphere near the surface of the Earth that includes all life and the land, water and atmosphere to which life on Earth is confined.

- The biosphere may be examined as a whole or at the level of the ecosystem, community, population or individual organism.
- An ecosystem is a complex but recognizable, relatively homogeneous system.
- An ecosystem includes a particular set of ecological communities and their physical environment, regarded as a unit.
- An ecosystem as a whole has "system" characteristics that derive from interactions of the system's components and that cannot be understood by studying only its parts.
- Because the occurrence of storms, fire, flood and other human or nonhuman disturbance is not uncommon, most ecosystems exist in a state of flux.
- Ecosystems are dynamic, interactive systems in which change relating to one physical or biological component results in changes to other components.
- Biomes are major ecosystem types that cover broad geographic areas and are defined in terms of characteristic climate, soils, vegetation and wildlife.
- Organisms influence the characteristics of ecosystems and are, over time, themselves strongly influenced by their ecosystem.
- Any organism or other component of an ecosystem can be fully understood only by studying it in relation to other components, in the context of the system.

SPECIES, POPULATIONS AND COMMUNITIES

- A biotic community is any set of interacting plant and animal populations within a given ecosystem.
- A population is a group of individuals of one species, interbreeding and living in a given area.
- Each species occupies a niche, playing a special ecological role in its community.
- Cyclical changes in population size, within limits, are a normal phenomenon for many species.
- Changing the size of any population changes the impact of that population on its ecosystem, affecting other populations directly and indirectly.
- A population tends to increase in size until limited by one or more factors.
- A limiting factor is any environmental factor that limits a population or species in numbers or geographic range.

INTERRELATIONSHIPS

- All elements of an ecological system are interrelated.
- Ecology is the study of relationships between organisms and the complex of physical and biological factors affecting them or influenced by them.
- Living things interact in many ways, directly and indirectly, through predation, parasitism, competition, symbiosis, mutualism and food webs.
- Interactions between species influence the growth, reproduction and distribution of species and the structure of communities and ecosystems.
- Ecological events at the ecosystem, community and population levels are made up of the combined interactions of individual organisms.
- Plant and animal communities influence each other in many ways.

FOOD CHAINS

- A food chain is a system through which energy flows, from the sun to plants and subsequently to herbivores; carnivores or omnivores; higher-level carnivores; and decomposers.
- In contrast to energy, which passes through ecosystems, the physical materials or nutrients necessary to living things are cycled and recycled through food chains and soil, water and air.

- In a given food chain, all organisms the same number of steps from the base of the chain are considered one trophic level.
- No energy conversion is 100 percent efficient, so every transfer of (food) energy from one trophic level to another involves the loss of energy from the food chain.
- Because of the inefficiency of energy transfer, each trophic level generally contains fewer individuals and only about 10 percent as much energy as the level below.
- Toxic substances can move through food chains and accumulate in the higher trophic levels at far greater concentrations than in the surrounding environment.
- Many food chains combine to form a food web.

HABITAT AND CARRYING CAPACITY

- All plants and animals, including humans, require habitat for their existence.
- The essentials of habitat, the basic needs of all animals, are food, water, shelter, and space or territory, in a suitable arrangement.
- Habitat adequate in quantity and quality to support a viable breeding population is essential to the continuance of any species.
- Most plant and animal species that are threatened or endangered today became so due to habitat loss or change caused by human activity.
- Many plant and animal populations are capable of reproducing in numbers greater that their habitat can support.
- Any given area has a carrying capacity, or a limit to the number of individuals it can support, for each species occurring there.
- Carrying capacity varies in accordance with geological, hydrological, climatic, biological and/or behavioral factors along with human activities and varies from season to season and year to year.
- Overpopulation occurs when a population exceeds the limit that its habitat can support over time without stressing the organisms or its resource base.

ADAPTATION AND CHANGE

- Change is a fundamental characteristic of the physical environment and all populations, species, communities and ecosystems.
- An environment is shaped continually by human and nonhuman forces which can alter various conditions and thus alter the types of living things able to exist there.
- Ecosystems show varying degrees of resiliency to human or nonhuman disturbance, giving them varying capacities and rates of recovery.
- Some ecosystems are extremely resilient and can absorb or adapt to many changes.
- Although stressed ecosystems may continue to exist, there are limits to the changes they can absorb.
- Because each individual organism is a unique product of the combined influences of its heredity and environment, variations between individuals are apparent in all populations.
- Genetic variations that increase the ability of an individual to survive and reproduce will increase in frequency in the population, a process termed natural selection.
- All populations exhibit specific adaptations to their biotic and abiotic environment, including physical, biochemical and behavioral adaptations.
- Extinction is a natural process occurring when populations are unable to survive natural catastrophes or adapt to environmental change.

BIODIVERSITY

- Biodiversity refers to the variety of life and includes genetic diversity, species diversity, diversity of communities and diversity of ecosystems.

- Biodiversity is currently decreasing at all levels for many reasons.
- Genetic diversity contributes to the ability of a population to adapt and survive environmental change.
- Temporal and spatial variation in the physical environment, along with interactions among organisms themselves, have given rise to a great diversity of species and habitats.
- Species and habitat diversity may be a part of the foundation for stable ecological systems.
- Human influences can alter plant and animal distribution, diversity and abundance and the distribution and existence of entire ecosystems.
- Human activities have accelerated the rate at which species become endangered and extinct.

HUMANS AS AN ECOSYSTEM COMPONENT

- Humans are a natural component of many ecosystems.
- All human activity takes place in the context of the planet's ecosystems.
- Natural processes structure the existence of human populations and communities as well as plant and animal populations and communities.
- No suitable human habitat is know to exist beyond the Earth's ecosystems.
- Humans affect the environment more than virtually any other organism and have the potential to influence all of the Earth's population, communities and ecosystems.
- Human influences on life forms and ecosystems may be direct or indirect, and changes any be short term or irreversible.
- Human influences on the environment tend to cumulative.
- Although humans are capable of significantly altering natural environments, the planet as a whole will survive any human manipulations.
- Total human impact on the environment is a function of the number of people and the impact per person.
- The effects of human activity on ecosystems increase in proportion to human desire for and acquisition of material goods.

EMERGING UNDERSTANDINGS

- Many problems, issues, and trends involving the environment in other parts of the world are similar to those in this country. 4
- Stable ecological systems contribute, on a long-term basis, to the stability of socioeconomic systems.
- Advances in the environmental sciences indicate that human existence depends not on an ability to alter natural systems but an ability to exist in concert with them.
- Environmental policies contribute to the conservation of species and ecosystems, but may mot compensate for loss of habitat or damage to physical or biological ecosystem components like soil, air, water or species.
- Pollution alters biophysical systems and thus affects socioeconomic systems.
- Externalities, or indirect costs paid by society as a whole, include real economic costs such as problems in human health or agricultural productivity that are caused by environmental pollution and degradation.
- In the long term, incorporating externalities in the price for a consumer product or the capital outlay for a large-scale project is advantageous to individuals and society.
- Advances in science and technology con contribute to solving environmental problems.
- When technological advances exceed human comprehension of their effect on the environment, unanticipated environmental problems may develop.
- Humankind's understanding of how this unique planet functions as a dynamic, living system in incomplete but expanding.

Culture and Society

INTERRELATIONSHIPS BETWEEN HUMAN SOCIETIES

- Nations are interrelated through their technological, economic and environmental activities.
- Through mutual reliance on natural resources and environmental quality, diverse societies are increasingly interdependent.
- Environmental problems and concerns often transcend political boundaries and cultural differences.
- Conflict and political instability within and between nations often stem from disproportionate distribution and control of resources,
- Cultural sites and artifacts contribute to understanding historic and prehistoric people and their environments.
- Lessons for modern societies are evident in studying environmental problems of past societies.

SOCIETY AND THE ENVIRONMENT

- Prehistoric, historic and modern human cultures are diverse partly because they evolved as adaptations to diverse natural environments with different plants, animals, climates and resources,
- The histories of all human societies reflect the interaction of individuals and groups with their environment.
- A healthy environment contributes to the economy of ancient and modern, developed and undeveloped societies.
- Environmental degradation causes the deterioration of natural life-support systems and therefore of societies dependent on those systems.
- Inspiration from and fear of natural phenomena have influenced societies in prehistoric, historic and modern times.
- Interactions between environmental factors and the characteristics of an individual influence the occurrence of many diseases.
- Environmental factors influencing health may be biological, physical or chemical, immediate or cumulative; and of human or other origin.

CULTURE AND ENVIRONMENTAL ATTITUDES

- Humans have developed many belief systems to explain their environments, and these beliefs shape their interactions with their environment.
- The environmental attitudes of a society are affected by custom and tradition, folklore and myth, economic considerations, religion, language, literature, art, science and technology.
- The design and maintenance of built environments reflect and influence the values, attitudes and lifestyles of human inhabitants.
- Modern technology society minimizes personal contact with natural environments, affecting attitudes and actions toward nature.
- Societal attitudes toward the environment are influenced by the coverage and perspective of modern communications media.
- Cultural and other differences may cause conflicts concerning the environment.

VALUES AND ETHICS

- Aesthetic, spiritual, intrinsic and other values that humans attribute to other species and the Earth vary from person to person and culture to culture.
- Western culture is strongly influenced by the Judeo-Christian ethic viewing the environment primarily as a source of natural resources to be wisely stewarded for human benefit.

- Values and ethics are key factors determining human behavior.
- The values and ethics are key factors determining human behavior.
- The values and ethics of individuals and societies are an important factor in determining the type and extent of individual and societal impacts on the world.
- How the environment is affected by specific actions is a scientific questions, but the choice of what action to take is a questions of ethics and of cultural, religious and personal values.
- Variation exists among different cultures in what constitutes accepted or ethical behavior toward the land, living things and natural resources.
- Ethical decisions involve consideration of direct and indirect costs and benefits to self and others, in the present and future.
- The continuance of life on Earth as we know it may depend on the exercise of an ethic of accountability for human impacts on the environment.

Resources, Resource Management and Environmental Issues

THE NATURE OF NATURAL RESOURCES

- Nonrenewable natural resources are not replenished through natural cycles or are replenished extremely slowly, on a geological time frame, and are thus strictly limited in quantity.
- Renewable natural resources are replenished through natural cycles, but are still finite.
- Plants and animals capable of reproducing more than is necessary to maintain their populations can be considered renewable resources.
- The renewable and nonrenewable resource base can be extended, within limits, by research, development, economic factors, and improved conservation and management practices.
- Natural resources and the areas in which they occur often have both consumptive and nonconsumptive use.
- Some resources, such as soils and watersheds, have material or consumptive values useful to human society but difficult to quantify in economic terms.
- Every living species is a unique, irreplaceable genetic resource with potential scientific, technical, medical or other practical value.

RESOURCES AND HUMAN SOCIETY

- Natural resources sustain human life.
- Natural resources are defined as such through their usefulness to society and relationship to human technologies, beliefs, wants and needs.
- The original source of all material goods is natural resources, or raw materials and energy obtained from the environment.
- Natural resources from the basis for every economy.
- Long-term economic prosperity depends on the availability and responsible use of resources.
- The history and even the demise of many civilizations has been determined by their use or misuse of environment and resources.
- The availability of natural resources influences the daily lives of individuals and the political strength and international influence of nations.
- Different levels of satisfaction of human needs and desires cause conflicts within and between societies as population and consumption levels rise and the resource base remains limited.

PATTERNS OF RESOURCE USE

- Most natural ecosystems and primitive human societies depend primarily on readily available renewable resources, with a balance between consumption and renewal of energy and materials.

- Modern technological societies currently depend heavily on external resources, including renewable and nonrenewable sources of energy and raw materials.
- Human population growth is occurring at an exponential rate.
- Increasing population and increasing per capita consumption are causing a steady increase in the global demand for energy and other resources.
- The amount of resources available per person is a function of population size as well as resource base.
- Changes in the cultural patterns, social and economic values, and mores of a society affect personal life-style and thus the use and conservation of natural resources.
- Citizens of the United States use more energy and other resources per person than the people of any other nation.

CONSERVATION OF NATURAL RESOURCES

- Conservation of natural resources—wise use and protection from waste or depletion—is the most basic form of stewardship and the most immediate means of maintaining availability of resources.
- Conservation includes balancing the level of extraction and use of raw and processed materials as well as reusing and recycling processed materials.
- Stewardship or conservation of resources involves keeping total resource use at a sustainable level, not simply substituting one resource for another.
- Effective conservation practices depend on clearly defined management objectives, an understanding of natural processes and the application of knowledge from many disciplines.
- Conservation policies and environmental regulations must be economically feasible.
- Ideally, the goal of conservation policies and environmental laws is to ensure that resource extraction and use occur in a context of long-range planning and consideration of society as a whole.

MANAGEMENT OF RESOURCES

- Management of resources and environments involves the application of scientific knowledge and technical skills to conserve or enhance the resource base and environmental quality.
- Effective resource management responds to new scientific knowledge, technological advances, government policies, changing human needs and values, and special conditions.
- Management practices can range from no activity to extensive intervention in ecological processes.
- It is possible to manage renewable resources so that they provide consistent and continuous supplies.
- All resource and environmental management practices are limited in scope and effectiveness.
- Philosophies, objectives and practices of various types of resource management are sometimes incompatible with each other, and therefore compromises and trade-offs may be necessary.
- Specific local, state and federal agencies are charged with management of natural resources and protection of environmental quality.
- Private industry, organizations and individuals contribute to resource management and environmental protection.

A CONTEXT FOR MANAGEMENT

- Resource extraction and use cannot occur without some degree of environmental change.
- Natural resources are interdependent and the use or misuse of one will affect others. [5]
- Long-range planning is integral to effective resource management, since future generations are likely to depend on the same natural resources we depend on today.
- New technologies and discovery of new resources may enhance the future resource base.
- Because no nation is entirely self-sufficient in natural resources, the use, management and conservation of resources needs to be considered in a context of global human need.

- Resource use for economic purposes needs to be balanced by consideration of ecological, educational, aesthetic and intrinsic value.
- Societies develop programs and policies related to resources and the environment through a variety of social mechanisms.
- Variation exists between cultures in the extent to which individuals or other entities are granted legal ownership or control of resources and the environment.
- The development and enforcement of management policies and environmental laws are affected by economic factors, societal needs and ethics, government attitudes, public and private interests, science and technology, and the relative influence of concerned parties.

CHALLENGES IN RESOURCE MANAGEMENT

- Because any given area or resource has many values and potential uses, it is a challenge to manage for as many values and uses as possible on a sustainable basis.
- Environmental policy decisions may become "issues" because some values are difficult to quantify, and contrasting uses or values must be considered.
- Conflict may occur between private land use rights and the stewardship of resources or maintenance of environmental quality for the public good.
- Management issues and environmental problems may arise when resource use is motivated by short-term goals and not tempered by evaluation of long-term consequences.
- Management decisions often encompass consideration of economic and environmental trade-offs, although the apparent conflict between economy and environment may dissolve when long-term rather than short-term economics are considered.
- Although political or legal processes are often utilized in resolving resource management questions and environmental issues, consensus is the ideal to aim for.

Responsible Action

QUALITY OF LIFE

- "Quality of life" or personal health and happiness is not necessarily dependent on "standard of living" or consumption of goods and services.
- Human quality of life is influenced by environmental quality.
- The standard of living and quality of life available to future generations are both affected by current personal and societal activities in relation to the environment.
- Cooperation among individuals, interest groups, organizations, businesses, communities and governments is essential to maintaining or enhancing environmental quality and the quality of life.

INDIVIDUAL AND GROUP CHOICE

- Many individual and community decisions, including choices related to recreation, transportation, vocation, housing, food, clothing and use of time and energy, affect the environment directly and indirectly.
- Modest changes in consumer preferences and other simple, daily, personal choices can significantly alter the use of natural resources and the impact of home and family on the environment.
- Product design and manufacturing practice can influence pollution as well as resource conservation.
- Community design and regional planning can influence pollution, resource conservation and preservation of natural areas.

- Change in personal and cultural behavior patterns is normal, and the direction and impact of change depends on conscious and unconscious choice at the individual and collective levels.
- Positive role models encourage positive choices and participation by others in environmental concerns.

RESPONSIBLE ACTION

- Both action and inaction affect the outcome of environmental issues.[6]
- Human decisions and actions, at the individual as well as group level, impact natural systems.
- Responsible, ethical environmental actions are a concern of all levels of society, including the individual, family, school or business, group or organization, community, state and nation.
- Responsible decision-making involves research into facts, careful consideration of values and objectives, creative evaluation of alternatives, a global orientation and long-term perspective.
- In determining responsible environmental actions, it is helpful to distinguish vital needs (essentials) from desires (nonessentials).
- The responsible citizen is concerned on a global as well as local level.

CITIZENSHIP

- Democratic societies define good citizenship to include understanding issues and participating in public processes.
- Participation in the democratic process may include voting, lobbying, serving on citizens advisory groups, participating in public hearings, communicating directly with elected or appointed officials and seeking public office.
- Interaction with the private sector may include consumer choice, media attention, ethical investing, demonstrating, communicating directly with industry leaders, taking legal action and working as an employee or consultant.
- Citizen involvement may include participating in mediation or consensus-building programs and forging creative new partnerships.
- Hands-on, direct action projects, such as clean-up days, contribute to environmental quality.
- Citizens can become involved in environmental concerns as individuals or through compatible interest groups at the local, state, national or international level.
- Individuals and organizations, acting independently of major social, economic or political institutions, play a role in educating the public and monitoring public and private activity in relation to the environment.

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1 In addition to information from technical references and input from expert reviewers, several environmental education frameworks were utilized during development of the framework for Environmental Literacy.

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2 This item was taken directly from Essential Learnings in Environmental Education.

3 This item was taken directly from Project WILD.

4 This item was taken directly from Project WILD.

5 This Item was taken directly from the Project Learning Tree Activity Guide.

6 This item was taken directly from the Framework for Washington Environmental Education.

The Tbilisi Declaration

Introduction

The World's First Intergovernmental Conference on Environmental Education, organized by UNESCO in cooperation with the United Nations Environment Programme (UNEP), was convened in Tbilisi, Georgia, (USSR), from 14 to 26 October 1977.

Delegates from 66 Member States and observers from two non-Member States participated as well as representatives and observers from eight agencies and programmes of the United Nations system, three other intergovernmental organizations and 20 international nongovernmental organizations. In all 265 delegates and 65 representatives and observers took part in the Conference.

The Conference was opened by UNESCO's Director General Amadou-Mahtar M'Bow and welcomed by a message of greeting from Leonid I. Breshnev, Secretary-General of the Communist Party of the USSR and Chairman of the Presidium of the Supreme Soviet of the USSR. Similarly participants were welcomed by Z.A. Pataridze, Chairman of the Council of Ministers of the Georgian SSR, host of the Tbilisi Conference. UNEP's Executive Director Mostafa K. Tolba then joined Mr. M'Bow in an address to the participants before they began almost tow weeks of working sessions.

Adopted by acclimation at the close of the Intergovernmental Conference, the Tbilisi Declaration noted the harmony and consensus which had prevailed and the unanimous accord in the important role of environmental education in the preservation and improvement of the world's environment, as well as in the sound and balanced development of the world's communities.

Declaration

In the last few decades, man has, through his power to transform his environment, wrought accelerated changes in the balance of nature. The result is frequent exposure of living species to dangers which may prove irreversible.

The Declaration of the United Nations Conference on Human Environment organized in Stockholm in 1972 proclaimed: "to defend and improve the environment for present and future generations has become an imperative goal for mankind." This undertaking urgently calls for new strategies, incorporated into development, which particularly in the developing countries is a prerequisite for any such improvement. Solidarity and equity in the relations between nations should constitute the basis of a new international order, and bring together, as soon as possible, all available resources. Education utilizing the findings of science and technology should play a leading role in creating an awareness and a better understanding of environmental problems. It must foster positive patterns of conduct towards the environment and nations' use of their resources.

Environmental education should be provided for all ages, at all levels and in both formal and non-formal education. The mass media have a great responsibility to make their immense resources available foe this educational mission. Environmental specialists, as well as those whose actions and decisions can have a marked effect on the environment, should be provided in the course of their training with the necessary knowledge and skills and be given a full sense of their responsibilities in this respect.

Environmental education, properly understood, should constitute a comprehensive lifelong education, one responsive to changes in a rapidly changing world. It should prepare the individual for life through an understanding of the major problems of the contemporary world, and the provision of skills and attributes needed to play a productive role towards improving life and protecting the environment with due regard given to ethical values. By adopting a holistic approach, rooted in a broad interdisciplinary base, it recreates an overall perspective which acknowledges the fact that natural environment and man-made environment are profoundly interdependent. It helps reveal the enduring continuity which links the acts of today to the consequences for tomorrow. It demonstrates the interdependencies among national communities and the need for solidarity among all mankind.

Environmental education must look outward to the community. It should involve the individual in an active problem-solving process within the context of specific realities, and it should encourage initiative, a sense of responsibility and commitment to build a better tomorrow. By its very nature, environmental education can make a powerful contribution to the renovation of the educational process.

In order to achieve these goals, environmental education requires a number of specific actions to fill the gaps which, despite outstanding endeavors, continue to exist in our present education system.

> *Accordingly*, The Tbilisi Conference:
> *Appeals* to Member States to include in their educational policies measures designed to introduce environmental concerns, activities and contents into their education systems, on the basis of the above objectives and characteristics;
> *Invites* educational authorities to promote and intensify thinking, research and innovation in regard to environmental education'
> *Urges* Member States to collaborate in this field, in particularly by exchanging experiences, research findings, documentation and materials and by making their training facilities widely available to teachers and specialists from other countries;
> and lastly,
> *Appeals* to the international community to give generously of its aid in order to strengthen this collaboration in a field which symbolizes the need for solidarity of all peoples and may be regarded as particularly conducive to the promotion of international understanding and to the cause of peace.

The Role, Objectives and Characteristics of Environmental Education

The Tbilisi Declaration together with two of the recommendations of the Conference constitutes the framework, principles and guidelines for environmental education at all levels-local, national, regional, and international-and for all age groups both inside and outside the formal school system

I. The Conference *recommends* the adoption of certain criteria which will help to guide efforts to develop environmental education at the national, regional and global levels:
   - Whereas it is a fact that biological and physical features constitute the natural basis of the human environment, its ethical, social, cultural and economic dimensions also play their part in determining the lines of approach and the instruments whereby people may understand and make better use of natural resources in satisfying their needs.
   - Environmental education is the result of the reorientation and dovetailing of different disciplines and educational experiences which facilitate an integrated perception of the problems of the environment, enabling more rational actions capable of meeting social needs to be taken.

- A basic aim of environmental education is to succeed in making individuals and communities understand the complex nature of the natural and the built environments resulting from the interaction of their biological, physical, social, economic and cultural aspects, and acquire the knowledge, values, attitudes and practical skills to participate in a responsible and effective way in anticipating and solving environmental problems, and in the management of the quality of the environment.
- A further basic aim of environmental education is clearly to show the economic, political and ecological interdependence of the modern world, in which decisions and actions by different countries can have international repercussions. Environmental education should, in this regard, help to develop a sense of responsibility and solidarity among countries and regions as the foundation for a new international order which will guarantee the conservation and improvement of the environment.
- Special attention should be paid to understanding the complex relations between socio-economic development and the improvement of the environment.
- For this purpose, environmental education should provide the necessary knowledge for interpretation of the complex phenomena that shape the environment, encourage those ethical, economic, and esthetic values which, constituting the basis of self-discipline, will further the development of the environment. It should also provide a wide range of practical skills required in the devising and application of effective solutions to environmental problems.
- To carry out these tasks, environmental education should bring about a closer link between educational processes and real life, building its activities around the environmental problems that are faced by particular communities and focusing analysis on these by means of an interdisciplinary, comprehensive approach which will permit a proper understanding of environmental problems.
- Environmental education should cater to all ages and socio-professional groups in the population. It should be addressed to (a) the general nonspecialist public of young people and adults whose daily conduct has a decisive influence on the preservation and improvement of the environment; (b) to particular social groups whose professional activities affect the quality of the environment; and (c) to scientists and technicians whose specialized research and work will lay the foundations of knowledge on which education, training, and efficient management of the environment should be based.
- To achieve the effective development of environmental education, full advantage must be taken of all public and private facilities available to society for the education of the population; the formal education system, different forms of non-formal education, and the mass media.
- To make an effective contribution towards improving the environment, educational action must be linked with legislation, policies, measures of control, and the decisions that governments may adopt in relation to the human environment.

II. The Conference *endorses* the following goals, objectives and guiding principles for environmental education:

The *goals* of environmental education are:

- To foster clear awareness of, and concern about economic, social, political and ecological interdependence in urban and rural areas:
- To provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment;
- To create new patterns of behavior of individuals, groups and society as a whole towards the environment.

The categories of environmental education *objectives* are:

Awareness-*to help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems.*

Knowledge-*to help social groups and individuals gain a variety of experience in, and acquire a basic understanding of, the environment and its associated problems*

Attitudes-*to help social groups and individuals acquire the skills for identifying and solving environmental problems.*

Participation-*to provide social groups and individuals with an opportunity to be actively involved in all levels in working toward resolution of environmental problems.*

Guiding principles-environmental education should

- consider the environment in its totality-natural and built, technological and social (economic, political, cultural-historical, moral, esthetic);
- be a continuous lifelong process, beginning at the preschool level and continuing through all formal and non-formal stages;
- be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective;
- examine major environmental issues from local, national, regional, and international points of view so that students receive insights into environmental conditions in other geographical areas;
- focus on current and potential environmental situations while taking into account the historical perspective;
- promote the value and necessity of local, national and international cooperation in the prevention and solution of environmental problems;
- explicitly consider environmental aspects in plans for development and growth;
- enable learners to have a role in planning their learning experiences and provide an opportunity for making decisions and accepting their consequences;
- relate environmental sensitivity, knowledge, problem-solving skills and values clarification to every age, but with special emphasis on environmental sensitivity to the learner's own community in early years;
- help learners discover the symptoms and real causes of environmental problems;
- emphasize the complexity of environmental problems and thus the need to develop critical thinking and problem-solving skills.
- utilize diverse learning environments and a broad array of educational approaches to teaching, learning about and from the environment with due stress on practical activities and first-hand experience.

National Environmental Education Act

Public Law 101-619

On November 16, 1990, the President signed into law the National Environmental Education Act. The Act is designed to increase public understanding of the natural environment and to advance and develop environmental education and training. It requires the U.S. Environmental Protection Agency (EPA) to assume a leadership role among federal agencies in implementing the new law and encourages partnerships among federal government agencies, local educational institutions, state agencies, not-for-profit educational and environmental organizations, and the private sector. The law builds upon long-standing efforts undertaken by EPA and other federal agencies to advance environmental education programs by establishing formal communication and advisory links between the federal government and other parties.

The following provides a brief synopsis of the mandates and authorizations under the Act:

1. Requires the establishment of an Office of Environmental Education (OEE) within EPA. The staff will be directed by a Director who will be a member of the Senior Executive Service and will include a headquarters staff of not less than 6 and not more than 10 full-time equivalent employees. The regional support will include one full-time equivalent employee per region.

2. Requires the establishment and operation of an Environmental Education and Training Program. On an annual basis, the Administrator will award a grant to institutions of higher education or a not-for-profit institution or consortia of such institutions to establish and operate an environmental education and training program.

3. Authorizes EPA to enter into grants and contracts. Requires publication of regulations addressing solicitation, selection, evaluation, and dissemination of environmental projects and results. Grants are not to exceed $250,000. Twenty-five percent of grant dollars will be awarded as grants of $5,000 or less.

4. Requires EPA to facilitate internships for college students and fellowships for in-service teachers with agencies of the federal government. To the extent practicable, there will be at least 250 internships and 50 fellowships per year.

5. Requires EPA to provide for national awards recognizing outstanding contributions to environmental education.

6. Requires the establishment of a Federal Task Force and a National Advisory Council to advise, consult with, and make recommendations to the Administrator of EPA on matters relating to the implementations of the Act. The Federal Task Force is composed of 16 federal agencies under the leadership of EPA. The National Advisory Council is composed of 11 members who represent primary and secondary education, colleges and universities, not-for-profit organizations, state agencies, business and industry, and senior Americans.

7. Requires the establishment of a National Environmental Education and Training Foundation that will encourage private gifts for the benefit of the environmental education activities of EPA; participate with foreign governments furthering environmental education and training worldwide; and further the development of environmental awareness. (Membership and terms of membership are specified.)

8. Authorizes funds to carry out the Act as follows: $12,000,000 for each fiscal year in 1992 and 1993; $13,000,000 for fiscal year 1994; and $14,000,000 for each fiscal year in 1995 and 1996. (Percentages for distributing the funds among programs are specified.) For fiscal year 1992, $6,500,000 was appropriated by Congress to carry out the Act.

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